Chapter Six:
PROJECT PLANNING AND PROGRAMMING

This Page Left Blank Intentionally.

CHAPTER SIX: PROJECT PLANNING AND PROGRAMMING

6.1 INTRODUCTION

For a petroleum facility to operate well, its facilities must have adequate capacity and its equipment must be in good working condition. Deficiencies must be identified early so that planning and programming can be started to upgrade facilities and replace deteriorated equipment. This will ensure the continued future use of the facility. Personnel must be familiar with the functional and administrative procedures required to ensure facility improvements are planned, programmed and executed. This chapter describes those procedures.

6.2 REFERENCES

The system established to identify facility deficiencies and to program appropriate corrective projects is defined in the following references:

DLAM 4270.1	DLA Facilities Projects Manual
OPNAVINST 11010.20	Facilities Project Manual
DOD 4140.25-M	DOD Management of Bulk Petroleum Products, Natural Gas, and Coal
NAVFACINST 11010.44	Shore Facilities Planning Manual
OPNAVINST 11010.34	Instructions for Preparation and Submission of the Annual Inspection Summary and Narrative Assessment
OPNAVINST 5090.1	Environmental and Natural Resources Program Manual

Additional references which aid in identifying deficiencies, determining required standards, developing project documentation and providing information for specific types of projects (i.e., pollution abatement projects) are:

NAVFAC Manual P-72	Facilities Category Code
NAVFAC Manual P-80	Facilities Planning Factors for Naval Shore Activities
NAVFAC Manual P-422	Economic Analysis Handbook

NAVFACINST 6240.3	Department of the Navy Pollution Control Reports; Responsibility and Guidance on Reporting of
NAVFACINST 5100.14	Navy Occupational Safety and Health (NAVOSH) Deficiency Abatement Program Ashore
NAVPETOFFINST 4100.1	Fuel Reclamation

Additional references include:

NAVFAC DM-22	Petroleum Fuel Facilities
NFC 30	Flammable and Combustible Liquids Code
NFC 45	Laboratories Using Chemicals Code
NFC 70	National Electrical Code

6.3 IDENTIFYING DEFICIENCIES

The first step in the facility planning process is to identify deficiencies. Deficiencies can be identified in several ways. Problems may be identified during regular facility inspections, when conducting routine operations and through the Shore Facilities Planning System as defined by NAVFACINST 11010.44. In addition, outside organizations may identify deficiencies during inspections.

6.3.1 Facility Inspection Program (FIP)

The FIP is the primary method used to identify facility and equipment deficiencies. This program consists of an inventory of assets, a physical annual inspection of facilities and an update of deficiency profile reports. The FIP is summarized in the Annual Inspection Summary (AIS) and the Narrative Assessment (NA). OPNAVINST 11010.34 delineates procedures and responsibilities associated with the preparation of the AIS and NA. Upon validation by the facility, the reports are forwarded to the major claimant.

The activity's Public Works Department (PWD) or area Public Works Center (PWC) is responsible for the FIP and the development of the AIS and NA. Since the AIS and NA are the primary source documents used by a major claimant to program funds to correct deficiencies, it is important that the AIS and NA accurately reflect the conditions of fuel facilities. Fuel facility deficiencies, regardless of how they are identified, must be in the AIS and NA if they are to be corrected in a timely manner. Because of the importance of these reports, the Fuel Department/Division Officer should personally review each AIS and NA to ensure that all fuel related deficiencies are included.

6.3.2 Fuel Department Identification of Deficiencies

During the routine operation and maintenance of a fuel facility, department personnel may observe facility deficiencies. There are two methods to determine the scope of these deficiencies and program corrective actions:

o A work request can be forwarded to the PWD or PWC to investigate the problem and recommend corrective action.

o Staff Civil Engineer (SCE) can be contacted to investigate the problem and program corrective action.

The method chosen by the fuel department will depend, to a large extent, on the nature of the problem and site specific working relationships with the PWD, PWC and SCE. It is essential, however, that the deficiencies included in the next update of the AIS and NA.

6.3.3 Identification by Other Organizations

Facility-related deficiencies may be identified during IG/SMA inspections or specialized periodic inspections conducted by outside organizations, such as Navy Occupation Safety and Health Inspections Program (NOSHIP), Environmental Compliance Evaluation (ECE), or annual Fire Marshal inspections. Deficiencies noted during these inspections shall be communicated to the PWD, PWC or SCE so that the scope of corrective action can be defined. These deficiencies will be included in the AIS and NA.

6.4 DEFINITIONS

Once a deficiency has been identified the next step is to define the method for correcting it. A wide range of options are available depending on the type of corrective action required. The formal use of definitions to explain the options available to correct deficiencies is intended to provide only a basic understanding of these options. Additional information pertaining to each option and funding limits is provided in the references which have been cited. The primary focal point for determining which of these options provides the best method for correcting the deficiency at a given facility is the activity's SCE, PWD or the local PWC. The following is a brief summary of available programming options.

6.4.1 Military Construction (MILCON)

A military construction project is a single undertaking at a military installation that includes all construction necessary to replace an existing facility or construct a new facility. Facilities constructed must be complete and usable, and the approved cost must be equal to or greater than the amount specified by law (currently > $300,000).

6.4.2 Minor Construction (MC)

A minor construction project is a single undertaking at a military installation that includes all construction necessary to replace an existing facility or construct a new facility. Facilities constructed must be complete and usable, and the total cost is less than the MILCON threshold specified by law (currently less than or equal to $300,000).

6.4.3 Repair

The restoration of a facility to such a condition that it can be effectively utilized for its designated purpose by overhaul, reprocessing or replacement of constituent parts or material that have deteriorated by action elements or usage and have not been corrected through maintenance. Repair projects can upgrade constituent parts of a facility to comply with current standards and regulations or to conform to modern design practices. If, however, the upgrade is required solely because of a change in mission (i.e., increase in size or capacity), the difference in cost between replacement in kind and the upgrade is considered construction.

6.4.4 Maintenance

The recurrent, daily, periodic or scheduled work required to preserve a facility by preventing its deterioration. Examples of maintenance include tank coating, painting pipelines, maintenance dredging and disposal of tank water bottoms and sediment.

6.4.5 Recurring Maintenance

Recurring maintenance is a subset of maintenance. This program is sponsored by DFSC. It is defined as maintenance performed by contract with a periodicity for the maintenance of a year or less. Examples of recurring maintenance are equipment maintenance, calibration of equipment, cathodic protection maintenance, pipeline pressure testing, fire protection maintenance, and painting. Separate recurring maintenance actions may be combined in a single project if the total cost of the actions is $100,000 per year or less.

6.4.6 Environmental Compliance

This is a DFSC sponsored program which includes minor construction, repair and maintenance projects required to bring facilities into compliance with Federal, State or local environmental laws and regulations. This program also includes the development or updating (if the period for updating is a year or greater) of documentation required by Federal, State or local environmental laws and regulations, spill clean up and related soil remediation if the spill occurred after 1 October 1992 and other environmentally related actions with period for accomplishment of a year or greater.

6.4.7 Maintenance, Repair and Environmental (MRE) Program

This is a DFSC managed program which includes minor construction, repair, maintenance, recurring maintenance and environmental compliance projects for facilities which receive, store and issue DLA owned fuel.

6.4.8 Recurring Environmental Compliance

This is a DFSC sponsored program which funds recurring environmental costs required to keep the facility in compliance with Federal, State and local environmental regulations and laws. To be eligible for this program, the facility must be used to receive, store or issue DLA owned fuel, the work must be performed by PWC or contract, and the requirement for compliance actions have a period of less than a year. Categories covered by this program include operating permits and fees, revisions of documentation, sampling and testing of emissions, removal and disposal of POL waste and spill cooperative fees.

6.4.9 DFSC Centrally Managed Programs

DFSC centrally manages several facility programs. These programs include:

o Automated Fuel Handling System (AFHS) - This program installs automated fuel operating and inventory systems at major bulk fuel terminals.

o Automated Tank Gauging (ATG) - This is an Air Force managed program administered by DFSC. It installs automated tank gauging systems at smaller fuel terminals (i.e., Air Stations).

o Underwater Surveys of Fuel Piers and Wharves - This is a NAVFAC program managed by DFSC. This program inspects under water portions of fuel piers and wharves.

o Pipeline Assessment - This is a NAVFAC program managed by DFSC. It evaluates the condition of cross country fuel pipelines (Navy owned pipelines from one activity to another).

Activities may be requested to provide information required to support these programs.

6.5 PROJECT SPONSORS

An evaluation of potential project sponsors shall be initiated while the appropriate option for correcting a deficiency is being determined. The scope of the project will be analyzed, including identification of the organization that would benefit most from the correction of the deficiency. Another factor that must be considered when determining a project sponsor is that responsibility for

correcting certain types of deficiencies has been assigned to specific organizations (for example, the clean up of hazardous waste disposal sites is the responsibility of NAVFAC).

Determining a project sponsor is important because it will affect the type of project documentation required, the method for justifying the project and how and when the project will be submitted and approved. The following is a list of potential sponsors.

6.5.1 Defense Logistic Agency (DLA)/Defense Fuel Supply Center (DFSC)

To be eligible for DLA/DFSC sponsorship, a project must be in direct support of the DLA bulk petroleum mission. The project must meet one or more of the following criteria:

o The facility must receive, store or issue DLA owned fuel.

o The project is necessary to assure compliance with Federal, State or local environmental standards.

o The project is necessary to protect DLA owned fuel from loss or contamination (i.e., fire protection systems, cleaning and lining tanks, repair pipelines, etc.).

o The project is of direct economic benefit to DLA/DFSC (i.e., tank conversion, reduction in demurrage, etc.).

o The project is directed by DLA/DFSC.

o The project is required to support DLA/DFSC minimum storage requirements.

DLA/DFSC will not fund the cost of organization maintenance performed by government or service personnel. DLA/DFSC will fund the cost of contract maintenance (Recurring Maintenance) when the work is beyond the capability of organizational labor and the work has historically been done by contract.

6.5.2 Navy Sponsorship

The Navy is responsible for sponsoring projects for the construction, repair and maintenance of facilities which receive, store or issue end use fuels (i.e., heating plant which services a single building, exchange service stations, etc.). The Navy is also responsible for sponsoring the construction and upgrade of fuel facilities if the project is in direct support of a new or expanded Navy mission.

6.5.3 Host Nation

At facilities where fueling operations are conducted in support of both U.S. and host nation Armed Forces, improvements to fueling facilities may be funded by the host nation. Criteria for the type of projects that will be sponsored by the host nation normally are addressed in the host nation support agreement. Two types of projects are usually sponsored by host nations: projects that will provide economic or operational benefit primarily to the host nation and improvements to fuel facilities for which the host nation has accepted responsibility for funding as part of the host nation support agreement or other agreements.

6.5.4 Naval Supply Systems Command (NAVSUP)

Fuel terminals designated as Defense Fuel Support Points (DFSP) with facilities to reclaim contaminated fuel can obtain funds from NAVSUP for special projects and equipment required to support these facilities. Procedures for obtaining these funds are outlined in NAVPETOFFINST 4100.1.

6.5.5 Naval Facilities Engineering Command (NAVFAC)

NAVFAC centrally manages the clean up of contaminated sites at fuel facilities if the contamination occurred prior to 1 October 1992 or the contamination is at a site which stores end use fuel using Defense Environmental Restoration Account (DERA) funds. The cognizant NAVFAC Engineering Field Division is responsible for coordinating clean ups using DERA funds. It should be noted that DLA requires the Navy to provide "clean sites" for the construction of DLA sponsored MILCON projects. This means that if the site is contaminated, it is the responsibility of the Navy to fund the clean up of the site

The planning, programming, and procurement of oil spill equipment is the responsibility of the Naval Facilities Engineering Support Service.

6.6 DEVELOPMENT OF PROJECT DOCUMENTATION

After a deficiency has been defined and the appropriate sponsor has been determined, the next step in the process of correcting the deficiency is the development of project documentation. It is critical that this documentation be complete, correct and well written because, if it is not, valuable time can be wasted correcting it. Areas of major concern are:

o The type of documentation used is consistent with the criteria for project documentation defined by the program sponsor.

o The deficiency to be corrected must be fully defined including its impact on fueling operations. If the deficiency is in violation

of health, safety, environmental or operational standards, the standards must be clearly and completely referenced and a short summary of its content provided.

o The cost estimate must be detailed, complete and accurate.

o The scope of corrective action must provide a solution to the problem which fully corrects the deficiency. It is cost effective and it is consistent with current design standards.

6.6.1 DLA Military Construction (MILCON)

Documentation required to support DLA MILCON projects should be developed using guidance defined in the most current addition of DLAM 4270.1. At a minimum documentation must include:

o DD Form 1390, Military Construction Program for each activity.

o DD Form 1391, Military Construction Project Data.

o Facility Study.

o Economic Analysis. The economic analysis must either justify the project solely on the basis of economics (Type I or primary analysis) or demonstrate the lowest cost alternative in order to fulfill operational requirements (Type II or secondary analysis).

o Scope and Detailed Cost Estimate. The scope and cost estimate must be verified by cognizant NAVFAC Engineering Field Division, local PWC or activity PWD.

o For overseas activities a statement of proponent's attempt to secure host nation support for the project, clearly demonstrating that such support is unavailable, impractical, infeasible or uneconomical.

o An assessment of potential environmental impact.

o Site approval verified by the cognizant NAVFAC Engineering Field Division.

o Other supporting documentation (i.e., photographs, notices of violation, etc.).

6.6.2 DFSC Maintenance, Repair and Environmental (MRE) Projects

Documentation required to support DFSC MRE projects should be developed using guidance defined in the most current addition of DLAM 4270.1. At a minimum documentation must include:

o DD Form 1391, Military Construction Data.

o Detailed cost estimate including SIOH and design costs. The cost estimate must be verified by cognizant NAVFAC Engineering Field Division, local PWC or activity PWD. Verification must be noted on the project documentation. If the project involves two or more types of work (i.e., construction and repairs), the cost for each type of work should be noted on appropriate lines in the cost estimate (C for construction, R for repairs and M for maintenance).

o Brief Facility Study (one or two pages addressing questions outlined in DLAM 4270.1, Appendix E).

o Other supporting documentation (i.e., photographs, notices of violation, etc.).

Sample documentation for MRE projects is provided in Appendix 14.

6.6.3 Recurring Environmental Cost Program

Documentation required to support the DFSC sponsored Recurring Environmental Cost Program is defined in Chapter 10.

6.6.4 Navy Sponsored Projects

The development and formats for Navy fuel projects is exactly the same as other Navy projects. Guidance for the preparation of documentation for minor construction, repair and maintenance projects is provided in OPNAVINST 11010.20. Procedures for the development of MILCON project documentation can be found in NAVFACINST 11010.44. Environmental projects should be documented using guidance provided in NAVFACINST 6240.3.

6.6.5 NAVSUP Reclamation Projects

The annual fuel reclamation budget should include projects required to support the reclamation mission. Projects should be listed in priority order with a narrative justification for each project. Step II documentation is required for repair and maintenance projects costing more than $200,000 and minor construction projects costing more than $100,000. Guidance required to develop Step II documentation is provided in OPNAVINST 11010.20.

6.6.6 NAVFAC Sponsored Projects

NAVFAC is responsible for funding projects/studies related to the installation restoration program. These responsibilities include preliminary assessments, site inspection, feasibility study and remediation design and action. General guidance for this program can be found in OPNAVINST 5090.1. More information on this program and assistance in implementing it can be obtained from the cognizant NAVFAC Engineering Field Division

6.7 SUBMITTAL OF PROJECT DOCUMENTATION

The timely submittal of project documentation is critical to ensure that the deficiencies are corrected expeditiously. Late submittals hinder the review process and, in some cases, may result in the rejection or deferral of a project. To ensure that project documentation is submitted in a timely manner, activities must be aware of program submittal dates and must tailor their program for the development of project documentation so that documentation has been developed and reviewed in advance of submittal dates (this should be a year-round effort).

6.7.1 DLA Military Construction (MILCON)

The following is a summary of the DLA MILCON submittal process:

o October - DFSC sends out a data call for MILCON submissions for a five year fiscal year period beginning five years from the fiscal year in which the data call occurs (i.e., the data for October 1994 is for fiscal years 1999 through 2003). Submissions for outyears (after the program year) may consist of preliminary documentation. NAVPETOFF, acting as the Navy Service Control Point (SCP), will forward this data call to Navy major claimants with copies to activities with DLA owned fuel.

o February - Navy major claimants forward candidate MILCON project documentation received by their activities to NAVPETOFF. This submittal should include a project priority list (major claimants having overseas activities should forward a copy of project documentation for these activities to appropriate CINC-JPOs). NAVPETOFF will review and validate project documentation and develop a Navy project priority list. A copy of the project priority list will be forwarded to Navy major claimants and CINC-JPOs for validation.

o March - NAVPETOFF forwards MILCON documentation and validated Navy priority list to DFSC.

o March to May - DFSC reviews and validates Service MILCON projects and develops integrated priority project list.

o May - DFSC develops a MILCON slate and forwards copies of SCPs and CINC-JPOs.

o July - The DFSC IPRB meets to review, endorse and prioritize projects for submittal to DLA. Major claimants will be invited to present their projects.

o August to April - DLA will review, endorse or reject DFSC submitted projects.

A milestone chart for this submittal process is provided as Exhibit 6-1.

6.7.2 DFSC MRE Projects

The following is a summary of the DFSC MRE submittal process:

o October - DFSC sends out a data call for MRE submission for a two year fiscal year period beginning the next fiscal year. Complete documentation is required for the first year and a list of projects is required for the second year. NAVPETOFF will forward this data call to Navy major claimants with copies to activities with DLA owned fuel.

o January - Navy major claimants forward candidate project documentation received by their activities to NAVPETOFF. This submittal should include a project priority list (major claimants having overseas activities should forward a copy of project documentation for these activities to appropriate CINC-JPOs). NAVPETOFF will review and validate project documentation and develop a Navy project priority list and a major claimant priority list. A copy of the major claimant project priority list will be forwarded to Navy major claimants and CINC-JPOs for validation.

o February - NAVPETOFF forwards documentation and validated Navy and major claimant priority lists to DFSC.

o February to April - DFSC reviews, validates and budgets for Service projects.

o May - DFSC provides a list of approved projects, approved with comment and not approved projects to NAVPETOFF. NAVPETOFF forwards this information to major claimants. It is important to note that, just because a project is not approved by DFSC, does not mean that the project will not be funded by DFSC. In most cases the project is not approved because the cost estimate was incomplete, the impact of the deficiencies on the DLA fuel mission was not adequately explained, or the scope of the project did not fully define how it will correct the deficiencies. If this information is provided, the project may be approved by DFSC.

o May - Activities may request design funds for approved projects from DFSC.

o October - Activities may request construction funds from DFSC.

A milestone chart for this submittal process is provided as Exhibit 6-2.

EXHIBIT 6-1

MILCON PROGRAM CYCLE

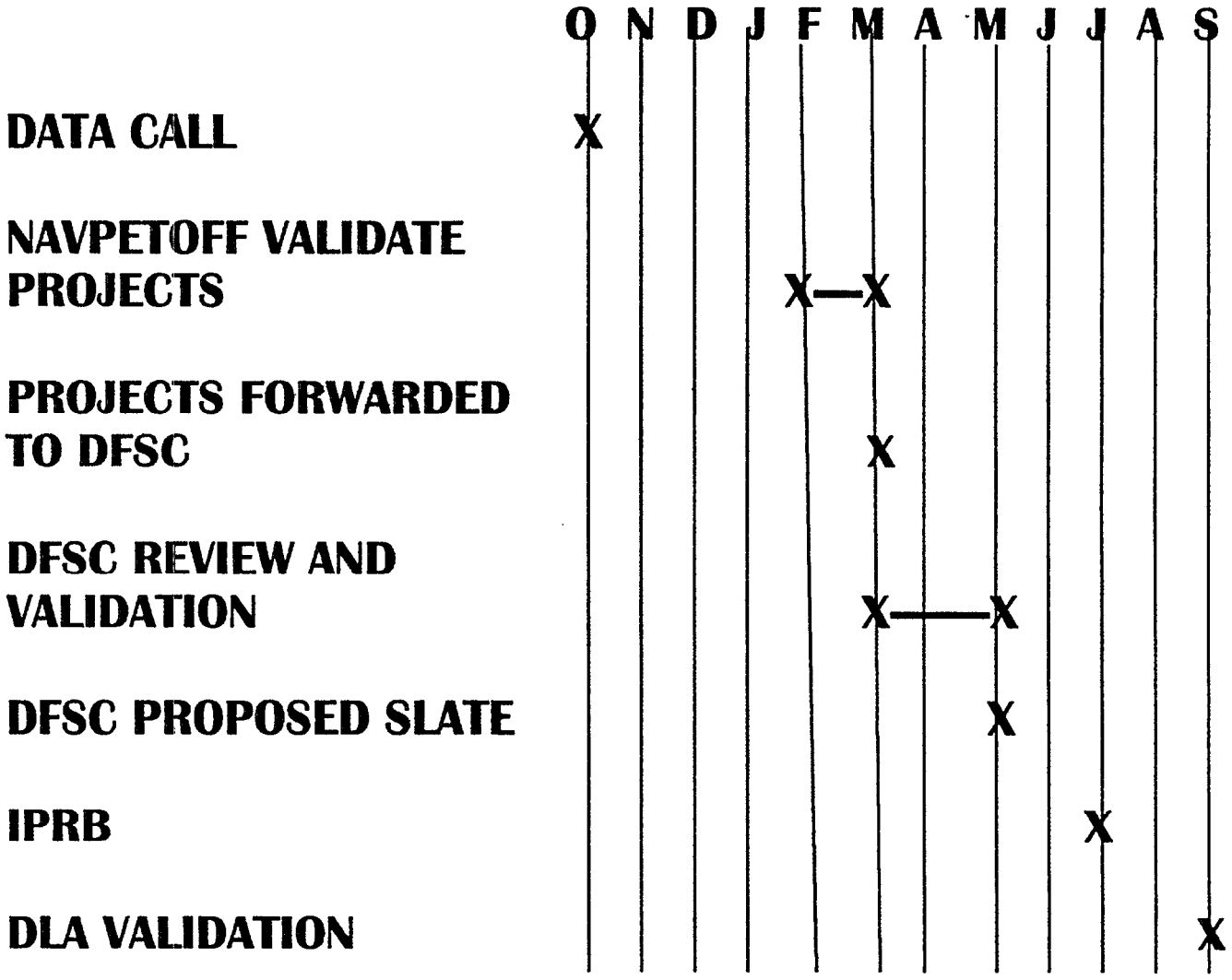
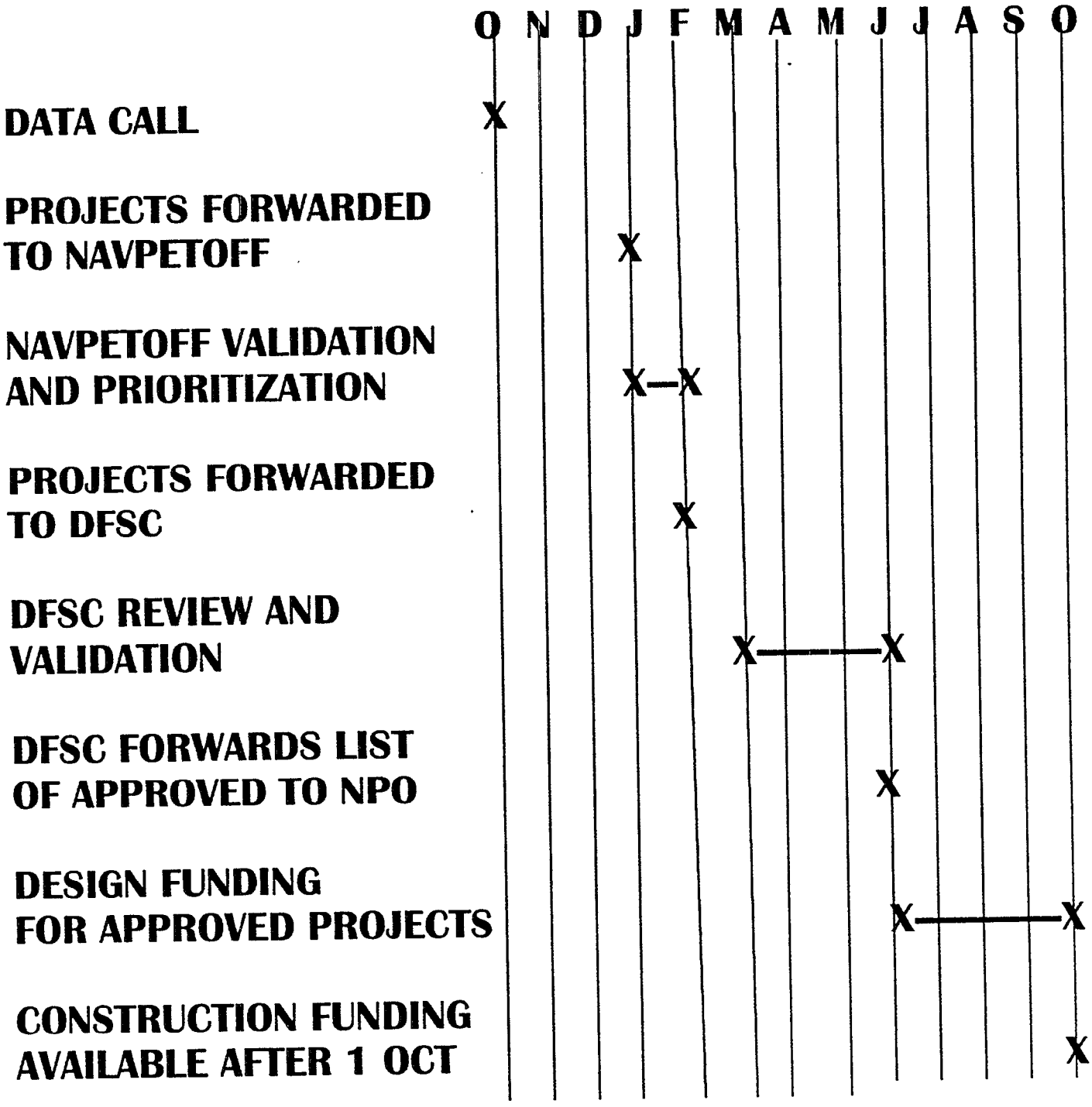


EXHIBIT 6-2

ANNUAL MRE PROGRAM CYCLE



6.7.3 DFSC Recurring Environmental Cost Program

Documentation for this program will be requested as part of the MRE data call. Procedures for the submittal of DFSC Recurring Environmental Cost information is provided in Chapter 10.

6.7.4 Submittal of Emergent Projects

If a problem should arise which has an immediate impact on the ability of an activity to perform its DLA fuel mission and, because of the critical nature of the problem, it must be corrected prior to the next programmed data call, the activity may request emergent funding to correct the problem. Due to the serious nature of this type of deficiency, a message is usually used to request funds. This message should be sent directly to DFSC with a copy to the activity's major claimant and NAVPETOFF. The message must define the nature of the problem, its impact if not immediately corrected, the scope of corrective action, the cost of corrective action, and an address where funds should be forwarded. Normally this message is followed up with a complete DD Form 1391.

This same procedure should be used when requesting funds to contain, clean up and restoration of an oil spill of DLA owned product.

6.7.5 Navy Sponsored Projects

Navy projects should be submitted via the chain of command and at times defined by the program sponsor and appropriate Navy instructions.

6.7.6 NAVSUP Reclamation Program

Fuel reclamation projects should be submitted to NAVPETOFF in May of each year as part of the activity's reclamation budget.

6.7.7 NAVFAC Programs

Requirements for oil spill equipment should be documented as part of the Annual Allowance Requirements Review. Procedures for submitting requirements is defined in NEESA 7.01G.

6.8 FUNDING SUPPORT

Requests for funds to execute programs must contain all the information required by the program sponsor. To ensure the timely funding of corrective actions, funding should be requested by the date specified by the program sponsor.

6.8.1 DLA Military Construction

DLA will forward design funds to the design agent (normally this is the cognizant NAVFAC Engineering Field Division) two years prior to the year of execution. Construction funds will be provided prior to construction bid opening (this is normally the January time frame of the year of execution).

6.8.2 DFSC Maintenance, Repair and Environmental

Funding requests may be made by letter or message. The request should include:

o A subject line which includes the project title and the DFSC assigned project number.

o Amount of funds required and the proposed use of the funds (i.e., design, construction, study, etc.).

o Type of funding cited on DD Form 448, Military Interdepartmental Purchase Request (Direct Cite or Reimbursable).

o Specific organization, address and contact point where funding documentation should be forwarded. The organization specified should receive all funds for a given project.

o Any additional information (i.e., date funds are required, internal contract number to be referenced, request that copies of funding documentation be forwarded to other organizations, etc.).

A signed acceptance copy of the DD Form 448 must be returned to DFSC.

6.8.3 Recurring Environmental Compliance

Procedures for obtaining funds to support this program are provided in Chapter 10.

6.8.4 NAVSUP Reclamation Program

Fund requests for approved reclamation projects should be made by letter. The request should normally be made in the quarter the funds are programmed.

6.9 RESPONSIBILITIES OF FUEL OFFICERS AND SUPPLY DEPARTMENT OFFICER

It is the duty of the responsible officer to ensure that all fuel facilities are able to perform their mission in an efficient and economical manner. Any deficiencies that hinder the ability of the facility to perform the assigned function must be corrected expeditiously. To identify and correct deficiencies, the responsible

officer must have a close working relationship with the activity PWD/PWC and SCE. As part of this relationship, the responsible officer should:

o Be closely and actively involved in all surveys and inspections of fuel facilities.

o Establish long-range plans for engineering inspections of major tanks, distribution systems, facilities and equipment.

o Request special surveys (i.e., corrosion control survey, technical assistance visit, etc.).

o Assist the PWD/PWC or SCE in defining the scope and sponsorship of actions necessary to correct deficiencies.

o Develop a prioritized list of projects and work requests in conjunction with PWD/PWC and SCE.

o Conduct regular meetings with PWD/PWC and SCE to review the status of projects and work requests.

o Review, and when appropriate, develop project documentation.

o Ensure project documentation is submitted in a timely manner.

o Ensure that questions on project documentation are answered and projects funds are requested as soon as projects are approved.

o Review and comment on all project designs and specifications.

o Assist construction inspectors during construction, repair or modification of facilities to ensure that the completed project will meet the requirements of the fuel department.

o Establish a file for each project or work request. At a minimum, this file should include project documentation and all related correspondence.

Only with continuous involvement by the responsible officer can there be assurance that actions required to correct facility-related deficiencies will be planned, programmed and constructed in an adequate manner.

Chapter Seven:
TRAINING

This Page Left Blank Intentionally.

CHAPTER SEVEN: TRAINING

7.1 INTRODUCTION

The success of a fuel facility operation is directly dependent on an adequately trained work force. Proper training gives employees the knowledge to correctly complete assigned duties and the confidence to act decisively in case of an emergency. Although a new employee receives much training before starting work (see section 7.3), completing the orientation program is just part of an ongoing process. Every employee's training continues in monthly safety meetings, fire and spill control drills and special hazard sessions (see section 7.5) The minimum training programs required to ensure the successful operation of a fuel terminal or air station are described in this chapter.

7.2 NEW EMPLOYEE INDOCTRINATION

It is essential that an orientation program for all new employees, including military personnel, be developed. This program should include:

a. A list of all instructions, manuals and guidance employees are required to read and understand. At a minimum, this list should include an operations manual; instructions for safety, security, and fire protection; and administrative guidance for scheduling matters like leave and overtime.

b. A familiarization tour of the facility. The tour should be conducted by the immediate supervisor and include the fire department, security office, fuel pier, pumping stations, fuel tanks, maintenance shops, medical facilities, administrative office, pipeline locations, water treatment facility, fuel laboratory and truck loading racks. For air stations, the tour should include flight lines, the crash crew facility, transportation shop and main supply office.

c. An explanation to all new employees, before starting work, about the location of fire alarm stations, speed limits on the fuel facility, parking areas for private vehicles, reporting accidents to the supervisor, security of the fuel facility, authorized smoking areas, and procedures for assigning a new employee to a work center to work with qualified personnel until successfully completing the personnel qualification standard for a work center and grade. As part of the explanation, the employee should be given a card with emergency phone numbers for fire department, security office, fuel control center and medical facility. NOTE: Before performing any work, new employees must be thoroughly indoctrinated in the formal safety program.

When a new employee is first hired, he should attend the general safety training conducted by the command. He will be issued pamphlets on safety and briefed on general safety rules. New fuel facility employees also will be issued a Fuel Terminal Operations Manual. This manual, along with the fuel department/division briefings and safety pamphlets, comprise some of the most important training the employee will receive.

The Fuel Terminal Operations Manual will familiarize officers and employees with the fuel terminal, correct procedures for fuel handling and reference publications that cover fuels, lubricants and safety.

The new employee should read these documents before the safety orientation and note any areas that remain unclear. The formal safety orientation will be conducted by senior personnel within the fuel facility who are fully qualified by virtue of their experience or training.

7.3 COMPETENCY BASED CERTIFICATION FOR EMPLOYEES

A Competency Based Certification (CBC) program shall be developed for each work center, including: operations, maintenance, administration, security, fire department, laboratory, utility system (i.e., water treatment, boiler plant, etc.), and fuel delivery branch. The work center CBC standards will be subdivided into grade level standards within each work center.

The CBC program shall include:

a. A description of the duties and responsibilities of tasks covered in the CBC standard.

b. A definition of how the employee will be evaluated and by whom. The evaluator must be fully qualified in the task included in the CBC standard and at least one grade higher than the individual being evaluated.

c. A checkoff list of required equipment and procedures the employee must be able to operate and understand. After the employee has satisfactorily completed an item on the checkoff list, it will be initialed by the evaluator.

d. A time frame for the completion of the CBC program.

Guidance on NAVSUP CBC training can be found in NAVSUPINST 12410.16, Guidance for Competency Based Certification (CBC) Training Program for Naval Supply Center Fuel Terminal Operations.

7.4 PERSONNEL QUALIFICATION STANDARD (PQS)

As outlined in the Aircraft Refueling Naval Air Training and Operating Procedures Standardization Program (NATOPS) Manual, NAVAIR 00-80T-109, all employees performing aviation fuel operations shall be trained and certified.

The training, as a minimum, shall consist of:

a. An informal course teaching the contents of NAVAIR 00-80T-109, MIL-HDBK-844 (AS), Aircraft Refueling Handbook, NAVFAC MO-230, Maintenance and Operation of Petroleum Fuel Facilities, MIL-HDBK-200, Quality Surveillance Handbook for Fuels, Lubricants and Related Products, and NAVSUP P-558.

b. A series of apprenticeship programs, i.e., on-the-job training (OJT), using NAVEDTRA 43288, PQS for Fuel Operations Ashore, for each system to be operated.

c. Attendance at an airfield indoctrination course as outlined in NAVAIR 00-80T-114, Air Traffic Control NATOPS Manual.

The certification process shall include a written and oral examination, as well as, direct observation of the employee performing the certified duties.

7.5 RECURRING TRAINING

Regardless of how familiar an employee is with his duties, periodic refresher training is mandatory. The purpose of this recurring training is to reinforce safe practices and procedures and to define responsibilities during emergency situations. Recurring training is also required to improve employee job performance in specialized areas.

7.5.1 Monthly Stand-Up Safety Meetings

In a well organized fuel department, safety meetings are regularly scheduled events in which all employees must participate to discuss relevant safety rules or instructions. Safety meetings will be held at least once a month and should be of one-half hour to one hour in duration. These meetings should be coordinated with the facility safety officer.

During the monthly meetings, important current safety material will be discussed. Potential subjects for discussion at these meetings are lifting and pulling heavy objects like fuel hoses, climbing ladders and stairs such as those on top of fuel trucks, eye and skin protection, driving trucks, spill control and fire prevention. Special meetings will be held to discuss accidents that have occurred during fuel operations and how each accident could have been prevented. In addition, give consideration to valuable ideas

from the employees.

7.5.2 Fire and Spill Control Drills

Fire and spill control drills will be addressed periodically, either during stand-up safety training or separately. In addition to this classroom training, actual fire and spill control drills will be conducted quarterly. These drills should be conducted by the facility fire department. At a minimum, the following will be addressed:

a. Fire and spill reporting procedures.

b. A review of exit routes for employees and equipment.

c. Location and use of spill containment materials and equipment.

d. Location and use of firefighting equipment and materials.

Selected personnel shall receive instruction in the use of all firefighting equipment available at the terminal. All fuel terminal personnel must be instructed in fire prevention and in basic firefighting techniques. Refresher training supplemented by firefighting practice will be held. Drills shall include what actions have to be initiated to close valves, stop pumps and contain spills, the first line of defense in containing any fire. See Chapter 9 for more information on fire safety.

7.5.3 Oil Skimmer Training

There are two types of training programs in oil skimmer use. The first type provides on-site, hands-on and classroom training for oil spill personnel in the deployment, use and retrieval of oil spill control equipment. This type of training is normally coordinated by the Navy On-Scene Coordinator (NOSC) and Naval Facilities Engineering Service Center (NFESC). The need for this type of training should be addressed to the local NOSC. The second type of training is directed toward facility personnel who operate and maintain the large DIP 3001 oil skimmer. This course is offered twice annually, once at NCBC Port Hueneme, California, and once at the Naval Station in Annapolis, Maryland. Requests to attend this course should be directed to NFESC. Per diem and travel expenses are the responsibility of the facility. In addition to these forms of formal training, each facility shall hold regular training sessions on how to deal with spills and how to deploy and use spill clean-up equipment and materials.

7.5.4 Specialized Training

Specialized training, which can be conducted on-site or at a training center, is intended to upgrade an employee's knowledge in a

particular subject, such as filter separator operations or quality assurance procedures. Specialized training is also required prior to the installation of new systems or modification of existing systems. An example of a specialized training is the Special Hazards Sessions, a safety session conducted before performing a special operation.

7.5.5 Review of Operations and Preventive Maintenance Procedures

To ensure that all employees are familiar with the content of the Operations and Maintenance Manuals, hold periodic training to review these manuals. At this training, stress standards for conducting various operations (e.g., loading a tanker) and performing routine maintenance tasks (e.g., valve maintenance).

7.6 SUPERVISORY TRAINING

New foremen must undergo an intensive training program during their first year as supervisors. This training will stress written and verbal communication skills, administrative procedures and organizational and personnel management. Training in these skills is necessary because most foremen have been promoted from the journeyman level and have had little formal training in these subjects. In addition to this intensive training program, foremen will also receive continuous training to update their supervisory skills.

7.7 TRAINING SCHEDULES AND RECORDS

Advance planning and scheduling for training will ensure that employees are receiving the training they require. It will help managers organize activities for maximum effectiveness. It is also vital to develop training schedules in advance so they can be included in the budget process.

The facility must maintain auditable records, including records for each individual, on the training programs that employees receive. Training records shall include all recurring training and special courses attended and CBC programs completed.

7.8 AIRCRAFT REFUELER/DEFUELER DRIVER TRAINING

NAVAIR 00-80T-109, Aircraft Refueling NATOPS Manual, Chapter 8, section 8.2.2, requires operators of fuel delivery vehicles to obtain a Motor Vehicles Operators Identification Card and comply with requirements delineated in NAVFAC P-300, Management of Transportation Equipment. A comprehensive driver training program should be developed to ensure all fuel delivery drivers have the knowledge and experience to properly and safely operate refueler vehicles. A sample driver training program is provided in Appendix 23.

Chapter Eight:
SAFETY

This Page Left Blank Intentionally.

CHAPTER EIGHT: SAFETY

8.1 INTRODUCTION

Safety is freedom from danger, risk, injury or loss. This freedom requires a vigilant, comprehensive safety program actively supported by all employees. The primary aim of a safety program is to increase the employee's awareness of the hazards and dangers involved in handling fuel. It is essential that personnel handling petroleum fuels and related equipment are thoroughly knowledgeable of the principle hazards to be encountered and how to prevent or reduce these hazards (see Exhibit 8-1). The safety program must instruct the employees how to eliminate the hazards or cope with them in a safe manner. Most accidents are caused by employees being complacent. Carelessness, not thinking about the job, and taking shortcuts to save time are attitudes just asking for accidents to happen. To minimize or prevent accidents, personnel must use common sense, concentrate on the job at hand, know and follow proper safety procedures. **DO NOT TAKE SHORTCUTS**. Do it right the first time, there may not be a second chance.

8.2 REFERENCES AND PUBLICATIONS

References that will be useful in establishing and maintaining a safe facility include the following:

29 CFR 1910	- Occupational Safety and Health Standards
29 CFR 1926	- Safety and Health Regulations for Construction
NFPA 30	- Flammable and Combustible Liquids Code
NFPA 30A	- Automotive and Marine Service Station Code
NFPA 45	- Standard on Fire Protection for Laboratories Using Chemicals
NFPA 77	- Recommended Practice on Static Electricity
NFPA 385	- Standard for Tank Vehicles for Flammable and Combustible Liquids
NAVFAC MO-230	- Maintenance and Operation of Petroleum Fuel Facilities

MIL-HDBK-201	- Military Standardization Handbook Petroleum Operations
NAVSEA S6470-AA-SAF-010	- U.S. Navy Gas Free Engineering Program Technical Manual
OPNAVINST 5100.23	- Navy Occupational Safety and Health Program
NAVPETOFFINST 10345.1	- Precautions to Tank Entry Guidelines for Leaded Fuel Tanks
NAVPETOFFINST 10341.1	- Handling Requirements and Safety Characteristics of JP5 Jet Fuel

8.3 WORKSITE ENVIRONMENT

The Fuel Officer is responsible for ensuring that personnel work in a safe and healthy environment. As part of this responsibility, annual industrial hygiene surveys are required to evaluate worksite safety and hygiene. Deficiencies noted during these surveys must be corrected in an expeditious manner. In addition, workers exposed to toxic and hazardous substances must be routinely monitored by medical personnel. Records of this monitoring program must be maintained for each worker.

8.4 TRAINING FOR A SAFETY PROGRAM

As discussed in Chapter 7, specialized training is needed to support a safety program. A good safety program requires regular and special training for all employees. New employees must be initiated in all aspects of safety; they must understand all safety procedures and reporting requirements for each activity they conduct before they begin work. Ongoing training programs shall be implemented so employees will periodically review safety measures.

8.4.1 Safety Meetings and Material

In a well-organized fuel department, safety meetings are regularly scheduled events in which all employees must participate to discuss safety rules or instructions pertinent to the operations in their particular areas. Safety meetings will be held at least once a month and should be of one-half hour to one hour in duration. During the monthly meetings, current and important safety material shall be discussed. In addition, consideration will be given to valuable ideas from the employees.

Instructional safety materials are available from the National Safety Council, the Code of Federal Regulations, state and local safety agencies, National Fire Protection Association, American Petroleum Institute and other federal safety agencies. Outside

speakers, such as policemen, fire department personnel, first aid course instructors, and manufacturer's safety experts may be asked to provide some variety of interest to the monthly safety meetings.

EXHIBIT 8-1

MANDATORY PRECAUTIONS FOR HANDLING PETROLEUM FUELS

The following precautionary measures are mandatory when dealing with or handling petroleum fuels.

- Consider all petroleum fuels to be potentially toxic and avoid physical contact with them.
- To avoid skin irritation, remove soiled or soaked clothing, take a bath or shower and wash the affected area with mild soap and warm water. Get medical advice if irritation, rash or burns persist.
- Before entering a tank, compartment or confined space, use an appropriate indicator to determine vapor and oxygen concentrations. If it exceeds allowable tolerances, do not enter the space without adequate personnel protective equipment. Be sure there is another person with you to stand watch outside the confined space at all times.
- Conditions in tanks and compartments are not constant. Even though a tank or compartment has previously been declared vapor free and lead free, changes in the weather, repairs using heat, mechanical cleaning or the escape of vapors from cracks and seams may be additional sources of petroleum or lead vapors. Keep an indicator on the job and make frequent checks of the atmosphere. Leave immediately if there is any sudden change (increase) in vapor concentration or signs of leaded sludge.
- Clearly mark sludge disposal areas with warning signs and barriers. Wear protective clothing if you must enter such areas.
- Mark all petroleum tanks with prominent signs to indicate type of product they contain or have contained (leaded fuels).
- Tanks which have previously contained petroleum products should never be used for potable water, unless the tanks have been specially prepared for water service. Never use a tank or container that has contained leaded gasoline for drinking water.

EXHIBIT 8-2

PROTECTIVE EQUIPMENT

- Respiratory Equipment. This equipment is used when working in confined spaces or in enclosures such as valve pits or sump pits when the air may be contaminated with harmful fumes, vapors, fogs, mists, gases, sprays, etc. For more detailed information concerning respiratory equipment, permissible practice, requirements, selection and maintenance refer to OSHA 29 CFR 1910.134 and International Oil Tanker and Terminal Safety Guide, second edition, Chapter 1, Section 1.5.

- Conductive Shoes. Conductive shoes are used by employees at fuel terminals because there is the danger of creating static electricity. In a fuel terminal, the creation and discharge of static electricity could be disastrous (see Section 8.7.3).

- Eye, Ear and Nose Protection. Eye, ear and nose protection is used where there is danger of inflicting injury to the eyes, ears, nose or face. Goggles are required to protect the eyes when using machinery or working in areas of dust, flying objects, etc. Protect your face by a face mask such as one used in welding. Ears can be protected by ear plugs which would be required when working in a high density noise area. For further information on face, eye and ear protection, refer to: OSHA 29 CFR 1910.151(c), Eye Protection; OSHA 29 CFR 1910. 133, Eye and Face Protection; OSHA 29 CFR 1910.135, Eye (goggles) Protection; OSHA 29 CFR 1910.252(e)(2), Face Protection for Welders; OSHA 29 CFR 1926.100, Hearing Protection; and OSHA 29 CFR 1926.102, Eye and Face Protection.

- Coveralls/Aprons. Coveralls/aprons are examples of personnel protective clothing used to diminish the risk of skin contact with an irritant such as petroleum fuels or acids. For further information concerning coveralls/aprons, refer to OSHA 29 CFR 1910.252(e)(3).

- Head Protectors. Head protectors are worn where there is a possibility of falling or swing objects or projections that may cause head injuries. Information concerning head protectors can be found in OSHA 29 CFR 1910.135, OSHA 29 CFR 1910.252(e)(2), and OSHA 29 CFR 1910.266(c)(iii).

- Safety Belts, Lifelines and Lanyards. These are used at fuel terminals during emergencies (e.g., rescue situations), tank cleaning operations or in situations where it is necessary to protect the individual from falling. More information on the subject can be obtained by referring to OSHA 29 CFR 1910.94(d)(11)(v), OSHA 29 CFR 1910.252(e)(4)(iv) dealing with safety belts; OSHA 29 CFR 1926.104, dealing with lifelines.

EXHIBIT 8-2 (continued)

- o Safety Nets. Safety nets are used when work places are more than 25 feet above the ground, water or other surfaces and where the use of ladders, scaffolding, catch platforms, temporary floors, safety lines or belts is impractical. For further information, refer to OSHA 29 CFR 1926.105.

- o Ring Buoys. These are located so that they are immediately available when employees work over or near the water. Refer to OSHA 29 CFR 1926.106 for more information on the subject.

8.4.2 Special Hazards Session

An important ingredient of a safety program is the special hazards session conducted prior to performing a special or unique operation. The supervisor will conduct this short session to ensure that the employees involved are completely cognizant of the potential hazards and the required safety procedures. Present the special hazard session prior to performing any maintenance or operation which is not routine and in which certain know hazards exist. For example, prior to entering a tank or before performing repairs at a pipeline leak site, a special hazard session must be conducted.

8.5 PERSONNEL PROTECTION AND LIFESAVING EQUIPMENT

Personnel engaged in hazardous operations must be provided with protective clothing and equipment. Supervisors are responsible for ensuring that employees wear the appropriate personnel protective apparel and use proper equipment in all operations where there is a potential for exposure to hazardous conditions. Protective equipment and apparel includes but is not limited to respirators, conductive shoes, eye/ear/nose and head protectors, coveralls, aprons, safety belts, lifelines or life vests. Exhibit 8-2 lists this equipment/apparel and provides a brief explanation of the what, why, when and where certain personnel protective equipment is used as well as references for detailed information.

8.6 SAFETY IN THE LABORATORY

Laboratory personnel are exposed to even greater hazards than fuel operator personnel. Working with chemicals in close quarters is especially hazardous. Basic laboratory precautions are listed in Exhibit 8-3. Minimum standards for the protection of human life and property when working in a POL laboratory include the following:

- o Training of laboratory personnel in basic fire prevention and fire emergency procedures;

- o Increased attention to the dangers of electrical systems and POL testing equipment;

- o Sufficient storage for and proper handling of flammable liquids and other hazardous chemicals;
- o Scheduled maintenance and inspection of laboratory equipment;
- o Adequate ventilation; and
- o Emergency fire blankets.

In addition to these standards, the following National Fire Protection Association (NFPA) and commonly accepted safety guidelines shall be followed:

a. Portable Fire Extinguishers. Portable fire extinguishers must be properly located and maintained in good working condition. Fire extinguishers must be rated for Class A, B and C (see 9.4) fires and must have UL or FM labels. Volume I, Section 10 of the NFPA National Fire Codes provides detailed information regarding selection, distribution, inspection and maintenance of portable fire extinguishers.

b. Alarm System. The alarm system should include both a fire alarm system and an automatic fire detection system. The system should be able to alert station or public fire department personnel. Signal transmission for fire alarms should be designed to activate alarms at more than one location. Volume 7, Section 72E of the NFPA Code provides information regarding selection, maintenance and testing of the various fire detection systems.

c. An Evacuation and Emergency Plan. It is vital to develop written procedures for laboratory emergencies. These procedures should include alarm actuation, personnel evacuation, equipment shutdown procedures and provisions for firefighting action, including detailed and specific plans for fire suppression operations to be supervised by the fire department. Emergency telephones, located exterior to the laboratory building, should be installed and connected directly to the fire department and emergency unit.

d. Emergency Eyewash, Shower. POL testing laboratories that handle corrosive materials or sufficient quantities of flammable or combustible materials shall maintain adequate protection devices to enhance personnel safety. These devices should include emergency showers and eyewash stations. Volume 4, Section 56C of the NFPA Code provides information regarding selection, placement and maintenance of the safety protection devices.

e. Means of Egress. POL testing laboratories shall provide at least two separate means of exit from the laboratory work area. This safety requirement is referenced in various building codes, NFPA manuals and 29 CFR.

EXHIBIT 8-3
LABORATORY PRECAUTIONS

Each laboratory shall have operating procedures that include all necessary safety considerations. A few general precautions are:

- o When in doubt concerning laboratory procedures or operation, consult with the authority responsible for developing the particular test method.
- o Pay attention to the test in progress. Do not leave your test unattended. If it becomes necessary to leave the laboratory even for a brief period of time when a test is in progress, request assistance and/or notify your supervisor.
- o Do not use shortcuts.
- o Do not engage in horseplay.
- o Do not use laboratory glassware as food and drinking containers.
- o Check the laboratory and equipment at the close of each day to be sure that no hazardous situations can develop.
- o Always wear rubber gloves when handling acids.
- o Ventilate laboratory and storerooms to prevent accumulation of flammable vapors.
- o Use fume hoods when working with toxic vapors.
- o Do not smoke in the laboratory.
- o Keep gas jets closed when not in use.
- o Never leave an open flame or heating element unattended.
- o Never pour volatile liquid where there are open flames or heating elements.
- o Discard organic products in authorized containers, never in sinks.
- o Never discard hot liquids in drains. Cool in covered containers before discarding.
- o Clean up areas immediately after a spill.
- o When diluting, pour acid into water. Never pour water into acid.
- o Do not use refrigerator that stores chemical material to store foods.

8.7 HAZARDS CONNECTED WITH FUEL HANDLING

The principle hazards and precautions regarding petroleum fuels are summarized below. It is essential that personnel handling these products become familiar with the hazards and safety aspects.

8.7.1 Vapors

Vapors from all petroleum products are hazardous not only because they constitute a fire and explosion hazard, but also because they may be toxic to the human body. Since the vapors from petroleum products create the greatest threat to life, the characteristics of vapors must be clearly understood by all personnel handling these substances. All petroleum vapors are very dangerous if breathed continuously. Breathing in an atmosphere with as little as 500 parts of vapor per 1,000,000 parts of air can cause a condition similar to severe alcoholic intoxication. Symptoms may include a brief initial state of excitement or exhilaration followed by disorientation, dizziness, nausea, unconsciousness and death.

8.7.2 Spontaneous Ignition

When larger masses of combustible material (which have been saturated with oil) are allowed to stand and heat is generated by slow oxidation, the temperature of the mass rises. If allowed to continue, the material will reach the ignition temperature and start a fire. See Chapter 9 for more on fire prevention.

Open flames from mechanical work and repairs involving heat from burning, cutting and welding are obvious sources of ignition. Other sources are smoking, sparks from smoking materials, flames from matches or lighters, friction sparks, shorts in electric currents and static electricity.

8.7.3 Static Electricity

The dangerous feature of static electricity is the spark discharge resulting from the accumulation of a static charge. In the presence of low flash petroleum products, it becomes disastrous. Static electricity can be generated by agitation of petroleum products (e.g., turbulence during tank filling, moving machinery or vehicles, or merely walking or moving in a dry atmosphere). Preventive measures, such as grounding of machines, equipment and self by wearing conductive shoes, are some examples of how to prevent static electricity discharges while working in close proximity of petroleum products. During fuel operations, the hazards from static electricity can be prevented by grounding or by reducing the pumping rate. In areas such as tank bottoms, where grounding is not possible, a reduced pumping rate should be used. This is sometimes called "cushioning the tank" and requires a pumping rate of less than 3 feet per second until the inlet is covered with 3 to 4 feet of

fuel. This action reduces turbulence and the potential for an explosive atmosphere at the inlet valve.

Products such as burner fuel, kerosene, diesel fuel, commercial aviation turbine fuel Jet A and JP5 are products with flash points above 38°C (100°F). Since these products normally are handled at temperatures below their flash points and do not normally create an explosive atmosphere, fire or explosive hazard is significantly reduced. However, a condition for ignition may exist if these products are handled at temperatures above their flash points and due care must be exercised.

8.7.4 **Petroleum Toxicity**

Liquid petroleum fuels, their vapors and some additive compounds which they may contain are potentially harmful to the human body. The degree of harm ranges from minor irritation to death. The seriousness of the damage caused by direct contact will depend upon the type of fuel, extent of contact, duration of contact and the part of the body affected. Care must be taken to wear the proper protective equipment at all times. Should contact with fuel occur, the affected area should be cleaned promptly. The following paragraphs describe specific recommended action(s).

8.7.4.1 **Fuel Oils, Diesel Fuels, Turbine Fuels and Kerosenes**. These liquid petroleum fuels are harmful and irritating to the skin. Contact with them will be avoided. If contact with these petroleum fuels is made, wipe the affected area with a dry rag and wash it with soap and water. Do not use solvents or gasoline as a cleaning agent.

Although fuel oils, diesel fuels and kerosenes are not poisonous, they must be kept out of the mouth, eyes, nose, ears and open cuts. If this happens, obtain first aid immediately (see Section 8.9). In addition, obtain medical aid immediately if the fuels enter the eyes or nose or are swallowed. If clothing or equipment becomes saturated with the liquid fuel, change as soon as possible. Prolonged wearing intensifies the irritation to the skin and increases the danger of fire.

Do not work in confined spaces or enclosures where fuel oil, diesel fuel or kerosene fuel vapors exist. The vapors can be toxic. Safety procedures for entering and working in confined spaces and enclosures containing the above fuel vapors are applicable and must be followed. Where concentration of hydrocarbon levels exceed 500 parts per million by volume, life-threatening hazards exist.

8.7.4.2 **Gasoline and Naphtha-based Fuels**. Gasoline is irritating to the skin. If allowed to remain in contact with the skin, it will cause severe burns. If clothing or equipment become saturated with gasoline, remove them. Prolonged wearing only intensifies the irritation to the skin and there is the danger of fire. Gasoline removes the protective oils from the skin and produces dryness,

roughness, chapping and cracking. Severe irritations or skin infection can follow this skin damage, which usually develops on the hands. Remove the gasoline with warm water and mild soap. If gasoline comes into contact with the tender tissue of the eyes, wash immediately with liberal amounts of tepid water, administer first aid and seek medical attention immediately. If gasoline is swallowed, it is exceedingly uncomfortable, irritating and can cause permanent damage. Seek medical attention immediately.

Gasoline vapors are toxic. If inhaled for more than a short time, dizziness, nausea and headaches occur. Heavier concentrations of gasoline vapors act as an anesthetic or cause unconsciousness. Immediately evacuate employees showing these symptoms when in a work area suspected of dangerously high concentrations of gasoline vapors. Persons overcome by gasoline vapors must be given first aid promptly. Do not return to the work area until the air quality of the work area has been tested, all the vapors in the work area have been removed and the work space has been certified safe for entry.

8.7.4.3 **Fuel Additives**. Fuel additives present the danger of toxic vapors and skin contamination. Extreme caution must be exercised when handling these substances.

Tetraethyl lead and tetramethyl lead (TEL/TML) are additives used in aviation gasoline and some motor gasolines (MOGAS) to improve the octane rating. Vapors from these additives are highly toxic. Direct contact with the concentrate from TEL/TML or its residue can result in serious permanent physical illness, brain damage or death. No person shall be permitted to enter a storage tank that has contained leaded gasoline without special equipment and complete instructions for its use.

A tank in use or having contained leaded gasoline must have the following warning stenciled above the manhole:

CAUTION: THIS TANK HAS CONTAINED LEADED FUEL. DO NOT ENTER TANK WITHOUT PERMISSION FROM FUEL OFFICER.

Fuel System Icing Inhibitor (FSII) also requires special handling. Currently there are two materials being used as FSII. Di-ethylene-glycol-mono-methyl-ether (DIEGME) is currently the only approved FSII additive for use in JP5 because of its high flash point. Ethylene-glycol-mono-methyl-ether (EGME) is the approved FSII material for use in both JP4 and JP8 fuels. Both FSII materials are considered mutagenic in the neat state; however, they are relatively safe once blended into fuel. Personnel involved in the handling and injection of these additives are advised to follow all guidance provided in the Material Safety Data Sheets, which includes wearing personal protective equipment and avoiding exposure by inhalation, injection and eye or skin contact.

Anti-Static Additive (ASA) increases the fuel's conductivity and helps relax static electric charges that are produced during fuel handling operations (filtration, pipeline movement, etc.). ASA is a brown, viscous liquid with a flash point of 73°F and a specific gravity of 0.93. It contains approximately two-thirds of a percent each of calcium and chromium.

Persons handling undiluted ASA must wear goggles to avoid any possibility of the product splashing into the eyes. In the event of eye contact, immediately wash the eye with water for 15 minutes and consult a doctor. Avoid repeated and prolonged skin contact and have available facilities for removing quickly and contamination from the skin with soap and water.

8.8 GAS-FREE ENGINEERING

The policies of the Department of the Navy regarding gas-free engineering for operations involving entry into or work in, on or adjacent to confined or enclosed spaces are contained in OPNAVINST 5100.23D. OPNAVINST 5100.23D, Chapter 27 prescribes the regulations and procedures applicable to confined or enclosed space entry and work and the minimum mandatory requirements for establishing and administering a gas-free engineering program. These regulations and procedures are applicable to all Naval shore activities, military and civilian personnel, and contractor operations and personnel when performing work aboard Naval facilities.

Before cleaning tanks or entering confined spaces, it is important to free the area of toxic, flammable vapors to ensure the safety of personnel. Vapor-freeing replaces hydrocarbon vapors with fresh air. Vapor indicators must be used to determine the progress of the vapor-freeing operations.

8.8.1 Vapor-Freeing Tanks for Cleaning

Three basic methods are available to free a tank of hydrocarbon vapors -- mechanical ventilation, steam ventilation and natural ventilation. Mechanical methods, such as drawing vapors from top man-ways by eductors or fans or forcing air through bottom shell man-ways by air, steam or electric fans, are relatively safe. Be sure the air mover is electrically bonded to the tank. Also, keep to a minimum the time during which the vapor content in the tank will be flammable.

Steam ventilation can present special hazards, such as generating static electricity or forming a vacuum from rapid steam condensation.

Natural ventilation is conducted by removing the roof and shell man-way covers. This is the least desirable method, however, because vapors can drift easily to an ignition source.

8.8.2 Entering Confined Spaces

The lack of ventilation in confined spaces presents special hazards to personnel who must work in these areas. It is vital to establish and maintain the proper procedures to avoid fires and injuries from oxygen deficiency, toxic substances and physical hazards.

Several precautions should be taken before entering confined spaces. These include:

- o Isolating the space from potentially hazardous material;
- o Removing sources of ignition;
- o Locking out electrical equipment to prevent inadvertent activation;
- o Removing or shielding radiation sources;
- o Testing the atmosphere in and around the area;
- o Providing adequate ventilation; and
- o Ensuring personnel have appropriate skin/eye protection and respiratory equipment.

8.8.3 Hot Work

Prior to commencing hot work in a confined or enclosed space, the space shall be tested, inspected, cleaned and ventilated, as required by the provisions of this manual, and certified "Safe For Hot Work." Extraneous flammable or combustible materials such as scrap wood, paper, rope, rags, etc., shall be removed from the space. Flammable materials shall be cleaned/removed from the space to a degree sufficient to eliminate any significant fire hazards. Combustible materials which cannot be removed shall be adequately protected. Ventilation ducting shall be of non-combustible metal or flexible construction and shall be free of hazardous levels of combustible residues.

8.9 FIRST AID

Contact with petroleum fuels can be extremely dangerous and will probably require immediate first aid. The first aid procedures to follow will depend on the nature of the contact. For example, skin irritation may only require washing the affected area, while swallowing fuel will likely require immediate medical attention. Exhibit 8-4 lists the procedures to follow for common accidents.

Further information concerning medical services and first aid can be found in references:

OSHA 29 CFR 1910.151	- Medical Services and First Aid
OSHA 29 CFR 1926.20; 23; 50	- General Safety and Occupational Health Provisions
American Red Cross	- Standard First Aid and Personal Safety Manual (Stock number 321116)
American Red Cross	- Cardiopulmonary Resuscitation (CPR)* Training Manual (Stock number 321907)

* CPR training is required to use this manual. All employees should be encouraged to attend formal CPR training.

EXHIBIT 8-4

FIRST AID FOR COMMON ACCIDENTS

- o Skin irritation. Remove soiled clothing. Take a shower and wash affected area with mild soap and warm water. If irritation, rash or burns persist, seek medical advice.

- o Petroleum fuels in the eye(s). Immediately flush the eye thoroughly with clean water and apply olive oil, castor oil or mineral oil. Obtain medical attention immediately.

- o Swallowing. Swallowing any significant amount of petroleum fuel should be regarded as serious. If the victim is unconscious, revive him and obtain medical aid immediately.

- o Inhalation of vapors. Get the victim into the open air as quickly as possible. If unconscious, revive him. If victim has stopped breathing, administer artificial respiration. Obtain medical aid immediately.

Chapter Nine:
FIRE PROTECTION

This Page Left Blank Intentionally.

CHAPTER NINE: FIRE PROTECTION

9.1 INTRODUCTION

Due to the flammable, combustible nature of petroleum products stored and handled within fuel terminals, the probability of fire is great. All personnel must be well trained in fire prevention, initial firefighting actions and reporting procedures. Proper training, including fire drills and a review of individual responsibilities, is mandatory for the preservation of human life and property.

At Navy fuel facilities where thousands of barrels of fuel are handled daily, hazards are always present. Safety instructions to deal with fires and accidents must be directed toward two objectives: (1) prevention and extinguishing and (2) first aid. The major objective, however, shall always be prevention. By applying the appropriate safeguards -- isolation, confinement, elimination of sources of ignition, prevention of rapid build-up of heat and pressure, and proper use of extinguishing equipment -- the prevention objective will be met.

9.2 REFERENCES

MIL-HDBK-201, Chapter 7	- Military Standardization Handbook, Petroleum Operations
29 CFR 1910.38, 106, 157, 158, 163, 165	- Code of Federal Regulations, Occupational Safety and Health Standards - Labor
NFPA 10, 14, 30, 77, 321, 385, 407, 704	- National Fire Protection Association
API Pub 1003	- Precautions Against Electrostatic Ignition During Loading of Tank Motor Vehicles
API Pub 2003	- Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents
API Pub 2008	- Safe Operation of Inland Bulk Plants
NAVFAC MO-117	- Maintenance of Fire Protection Systems
NAVFAC MO-230	- Maintenance Manual for Petroleum Fuel Facilities

International Oil Tanker and Terminal Safety Guide

9.3 ELEMENTS OF FIRE

For a petroleum fire to occur, three elements must be present at the same time and in the correct proportions. These elements are:

- o Fuel in the form of petroleum vapors;
- o Oxygen (air) to support combustion; and
- o A flame, spark or arc with enough energy to ignite the fire or enough heat to raise the temperature of the petroleum vapor to its ignition temperature.

Operating personnel must remember that in any operation they perform, two of the elements, air and fuel, are always present. The only other element is an ignition sources which, if not eliminated, will cause an explosion or a fire. Therefore, particular attention must be given to eliminating all possible sources of ignition.

Note that when petroleum is ignited, it is the vapor that burns -- not the liquid. Petroleum vapor, when mixed with a certain proportion of air, will burn. A gasoline vapor-air mixture containing about 1 percent to 7 percent gasoline vapor would have sufficient fuel (vapor) and sufficient oxygen (93 to 99 percent) to burn or explode.

If there is too little vapor (a lean mixture) or too much vapor (a rich mixture) in proportion to air, the mixture cannot burn. For example, under normal conditions, the vapors in a full gasoline tank are too rich to ignite. The nearly empty gasoline tank is more hazardous because there is sufficient air mixed with the gasoline vapor to support a fire or explosion if a spark or flame is introduced. Exhibit 9-1 is provided to assist in determining whether a given fuel at a given temperature is within the explosive range.

9.4 TYPES OF FIRES

Fires may be divided into three classes, each requiring different firefighting techniques and extinguishing agents. The Underwriters Laboratories (UL) Inc., categorize fires into these classes:

- o Class "A" fires, combustible material fires - Fires that have ordinary combustibles such as wood, brush, paper, grass, rags and rubbish.
- o Class "B" fires, flammable liquid fires - Fires consisting of flammable liquids such as gasoline and other fuels, solvents, lubricants, paints, greases, vegetable oil and similar substances.

- Class "C" fires, electrical fires - Fires that involve live electrical equipment such as wiring, motors, switches and transformers.

Any one or a combination of these classes can be encountered at a fuel terminal. Personnel must be familiar with firefighting procedures to handle any fire which could conceivably occur. Examples of common types of fires at fuel terminals are:

- Brush/grass fires
- Tank truck/rail car fires
- Pipeline break/hose rupture fires
- Vent or valve pit fires
- Pumphouse/manifold fires
- Storage tank fires
- Electrical/switch gear fires

9.5 SOURCES OF IGNITION

Since all petroleum products at given temperatures and pressures furnish the first factor necessary for fire (fuels in the form of vapor) and since there is usually enough oxygen to support a fire, all possible sources of ignition must be effectively controlled. Some of the most common sources of ignition which must be controlled/ eliminated at a fuel terminal include:

- Open flames, fires, lamps, lighted smoking materials, matches, cigarette lighters, torches and boilers.

- Hot flying particles such as embers, soot, grinding/welding and cutting sparks.

- Sparks or arcs from electrical equipment.

- Static discharges created by clothing, particularly wool, rayon and synthetic fabrics rubbing against the wearer's skin during normal body movement.

- Static discharges from ungrounded steam hoses, CO_2 nozzles and sand blast hoses.

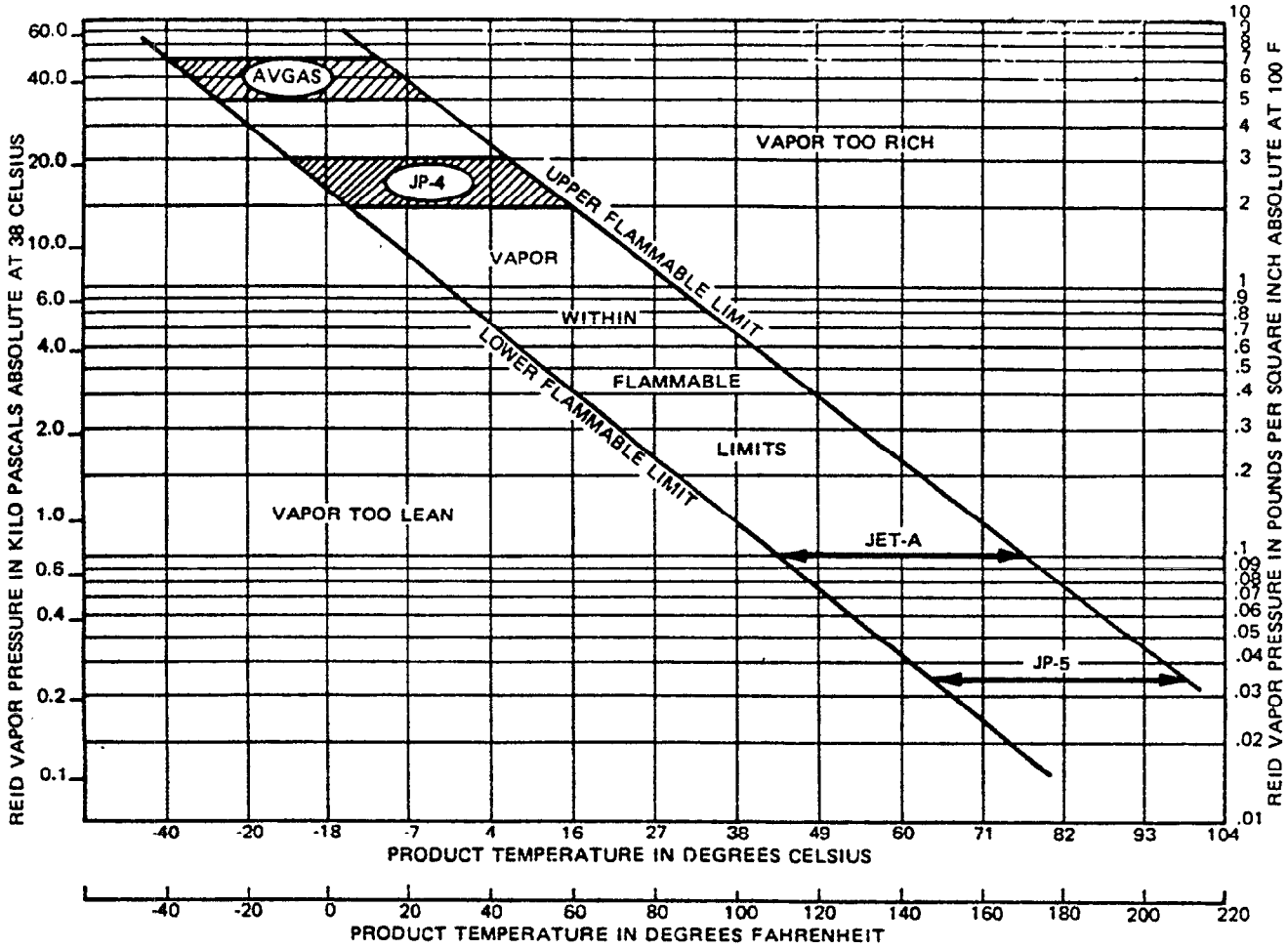
- Static discharges emanating from liquid petroleum surfaces to gauging tapes or tank fittings during product transfers.

- Lightning strikes during electrical storms.

- Motor vehicle catalytic converters, aircraft radar transmitters.

EXHIBIT 9-1

RELATIONSHIP BETWEEN TEMPERATURE, RVP AND
FLAMMABLE LIMITS OF
PETROLEUM PRODUCTS AT SEA LEVEL



9.6 VAPOR SOURCES

Fires can be minimized by controlling or eliminating sources of vapor emissions. Some sources of petroleum vapor emissions that can be eliminated, minimized or prevented at fuel terminals are:

- o Spilled petroleum;
- o Improperly maintained tank vents that will allow the escape of hazardous petroleum vapors;
- o Sludge in bottoms of tanks being repaired;
- o Petroleum leakage into poorly ventilated pits, trenches, pump rooms;
- o Fuel stored in open containers;
- o Volatile fuels used for cleaning purposes; and
- o Improper storing of oily rags and oily wastes.

9.7 COMBUSTIBLE AND FLAMMABLE LIQUIDS

All petroleum products, being composed of carbon and hydrogen, will burn and are therefore said to be combustible materials. Any materials which can be ignited easily and which will burn with unusual rapidity are said to be flammable.

9.7.1 Combustible Liquids

According to the National Fire Protection Association (NFPA) Standards, combustible liquids are those liquids having flash points above 100°F (37.8°C). Combustible liquids shall be subdivided as follows:

a. Class II liquids include those having flash points at or above 100°F (37.8°C) and below 140°F (60°C).

b. Class IIIA liquids include those having flash points at or above 140°F (60°C) and below 200°F (93.4°C).

c. Class IIIB liquids include those having flash points at or above 200°F (93.4°C).

9.7.2 Flammable Liquids

Flammable liquids are liquids having a flash point below 100°F (37.8°C) and having a vapor pressure not exceeding 40 pounds per

square inch (absolute) at 100°F (37.8°C). Flammable liquids are known as Class I liquids. Class I liquids are subdivided as follows:

a. Class IA liquids include those having flash points below 73°F (22.8°C) and having a boiling point below 100°F (37.8°C).

b. Class IB liquids include those having flash points below 73°F (22.8°C) and having a boiling point at or above 100°F (37.8°C).

c. Class IC liquids include those having flash points at or above 73°F (22.8°C) and below 100°F (37.8°C).

9.7.2.1 **Flash Point**. Flash point is an index of the flammability of a petroleum product. It is the lowest temperature at which a liquid gives off sufficient vapor at its surface to form a vapor-air mixture that can be ignited momentarily.

9.7.2.2 **Fire Point**. The temperature to which the product must be heated to burn continuously when the mixture of vapor and air is ignited is known as the fire point.

9.7.2.3 **Volatility**. Volatility is the property of a liquid to vaporize readily at ambient temperatures and pressures. A volatile fuel, such as gasoline, is one that readily forms vapors at a low temperature and boils at a relatively low temperature. A good indicator of volatility is the flash point. Fuels likely to produce a flammable vapor-air mixture under normal handling conditions are gasolines and naphtha-based jet fuels (JP4).

Non-volatile fuels are not likely to produce a flammable vapor-air mixture under normal conditions. Nevertheless, these fuels will burn readily once they are ignited. Some non-volatile fuels are burner fuel oils, diesel fuels, kerosenes, and kerosene-based jet fuels (JP5).

9.8 PREVENTIVE MEASURES

Petroleum fires can be prevented by removing or changing one of the three required elements of fire (combustion): oxygen, vapor, or ignition. Since it is not always practical to control the amount of oxygen present, fires can be most easily prevented by controlling sources of ignition or the amount of petroleum vapors that may be present.

Some of these preventive measures can be accomplished by good equipment handling, proper equipment maintenance, good housekeeping, good operating procedures and good training.

9.8.1 Fire Control Plans

At fuel terminals, a fire control plan establishes the chain of command during a fire emergency. Some terminals have their own fire department responsible for coordinating and controlling all firefighting and associated activities.

Other terminals do not have their own fire departments. They must rely upon arrangements made with local fire departments and/or agencies to come to their aid in case of fire. Terminals without fire departments must designate persons to be responsible for establishing and maintaining a terminal fire, emergency plan, maintaining a firefighting equipment plan, conducting fire drills and inspections and designating firefighting duties and responsibilities to others (e.g., action of shore personnel at piers, tank farm personnel).

9.8.2 Firefighting Equipment Plan

A plan which shows the location and utilization of firefighting equipment in the terminal is known as a firefighting equipment plan. This plan will be included in the fuel department operations manual.

9.8.3 Fire Drills and Training

The extent of training in fire prevention and in firefighting given to fuel terminal personnel depends on whether there is a permanent firefighting unit attached to the terminal or whether arrangements have been made to procure speedy assistance from another source (see section 7.5.2).

9.8.4 Inspections

Zone inspections by the fuel terminal fire personnel shall be conducted and discrepancies reported to the department head for corrective action (see Exhibit 9-2).

9.8.5 Fire Watches

When open flame or heat producing work such as welding, cutting, brazing, etc., is to be conducted in the presence of combustible materials or flammable residues, a fire watch shall be established at the worksite. The fire watch shall be trained in the nature of any fires which might occur and in the proper use of the fire extinguishing equipment provided. Where hot work may increase the temperature in a wall, bulkhead or other separating structure,, thus creating a fire hazard on the opposite side of the structure, a fire watch shall also be established on the side opposite the worksite. A system of communication shall be established to permit the fire watch to convey the development of hazardous conditions on the opposite side of separating structures, and to signal the

necessity to stop hot work. The fire watch on the side of the separating structure opposite the hot work shall also be provided with and be trained in the use of fire extinguishing equipment suitable for the hazard.

9.9 PORTABLE FIREFIGHTING EQUIPMENT

For fires to exist, the right combination of fuel, oxygen and a source of heat (ignition) is required. Therefore, fires can be extinguished by the removal of either fuel, air or heat. The main aim of firefighting equipment and firefighting procedures, therefore, is to reduce temperature, remove the fuel or exclude air from the fire.

Portable firefighting equipment is designed to cope with fires of limited size. Portable firefighting equipment is necessary and desirable even though the property may be equipped with fixed fire protection equipment.

Extinguishing systems shall be selected for the specific class or classes of hazards to be protected in accordance with Exhibit 9-3.

9.9.1 Foam Extinguishers

Firefighting foam is a stable aggregate of small bubbles, lighter than oil or water, that flows freely over burning liquids and forms a tough continuous blanket to separate volatile combustible vapors and air. It resists disruption to wind, draft, heat and flame attack. It is also capable of resealing itself in case of a mechanical rupture. Furthermore, it clings to vertical and horizontal surfaces, thereby covering high risk areas. Foam retains these qualities for very long periods of time. The types of foams employed are air or mechanical foams, protein foams and synthetic foams. Foam is primarily used for Class "A" and "B" fires.

9.9.1.1 **Premix Foam Appliance**. Premix firefighting foam is particularly useful where fire water pumps are not available. A 30-gallon capacity premix foam appliance is very effective for use on fires at pier berths.

9.9.1.2 **Concentrate Wheeled Diaphragm Foam Proportioner Appliances**. This firefighting foam appliance is used where fire water is available to mix with a 30-gallon capacity foaming agent. Fresh, salt or brackish water may be used. The unit can be purchased with or without wheels and a 50-foot hose. It can be used with all foam liquids and can be operated by one man. It is particularly useful for fires at pier berths and in fuel tank storage areas.

9.9.1.3 **Foam Pumper Trucks**. Mobile foam pumper trucks carry their own water supply as well as an air foam concentrate and monitor nozzle. Naval Air Stations are equipped with an added capability of a dry chemical agent (especially potassium salt-type purple K) for

aircraft crash rescue purposes. This type of unit is a twin/dual agent pumper truck. The foam pumper truck is very versatile and effective. It is not dependent on the availability of water/foam. Since it can be transported to the fire, it is useful in facilities where it is difficult to predict the location of fires.

9.9.2 Dry Chemical Extinguishers

Extinguishers of this type are available as hand-held or wheeled units. Types of agents available are: sodium bicarbonate base, potassium bicarbonate base, potassium chloride base or potassium urea base. For use on flammable liquid fires, the stream should be directed at the base of the flame. Best results are obtained by attacking the edge of the flame and moving toward the back of the fire by a sweeping side-to-side action of the nozzle. Special precautions should be taken with this type of extinguisher to prevent re-ignition. These extinguishers are useful for Class "B" and "C" fires.

9.9.3 Carbon Dioxide (CO_2) Extinguishers

Carbon dioxide is an excellent smothering agent for extinguishing fires in closed spaces. The agent does not have a residue and penetrates into areas that cannot be reached by other means. Its use is recommended to protect machinery, electronic equipment or record storage. The agent is discharged in the form of a gas/snow cloud, over a relatively short range (three to eight feet). It is not recommended for use in areas which can experience winds. It should not be used as a fire prevention agent in pumprooms, tank spaces or on petroleum due to the possibility of generating static electricity.

9.9.4 Fire Blankets

Fire blankets are mainly effective for prompt extinguishing of burning clothes on personnel and are reserved for personnel use. If wet, they may be used to smother a fire at a vapor leak or vent. These are used for Class "A" fires only.

9.10 FIXED FIREFIGHTING EQUIPMENT

Fixed firefighting equipment is normally associated with areas where there is a large volume of fuel or high flow rates. Because these types of fuel are highly volatile, firefighting equipment is located nearby to be readily available in areas where a high potential for fire exists.

EXHIBIT 9-2

ZONE INSPECTION CHECKLIST

Zone inspections shall include the following:

- o Extinguishers shall be checked to see that they are properly tested, charged, protected, and available.
- o Fire water system shall be tested and protected against freezing and physical damage. These systems include hydrants, stand pipe drains, etc.
- o Fire hoses and coupling shall be examined for deterioration, quantity, pressure and adaptability to existing fire water system.
- o Electrical equipment, grounds, bonds and cathodic protection (which could be a source of ignition) shall be examined and reported if discrepancies are noted.
- o Dikes surrounding storage tanks and dike drains shall be checked for adequacy and operation.
- o Pumphouses shall be inspected for good housekeeping, product leaks, spills, proper ventilation and protection against sources of ignition.
- o Tank farms shall be inspected for good housekeeping. Weeds and brush growth shall be cut and removed from diked and tank areas.
- o Check areas near boiler plants heating installations for possible sources of flammable vapor release.
- o Check to see that "posted" signs of "NO SMOKING," etc., are posted in proper locations and rules are observed.
- o Check that all automatic fire doors and windows are maintained and free of obstruction.
- o Check all the permits covering hot work, cutting, welding, etc.
- o Check that all pipeline and valves, etc., are marked in accordance with MIL-STD-161, as applicable.

EXHIBIT 9-3

SELECTION OF EXTINGUISHERS BY HAZARD

Protecting Class "A" Hazards:	Water-base extinguishers, multi-purpose (ammonium phosphate base) dry chemical extinguishers, or Halon 1211 extinguishers.
Protecting Class "B" Hazards:	Carbon dioxide, dry chemical, Halon, and AFFF extinguishers.
Protecting Class "C" Hazards:	Carbon dioxide, dry chemical, or Halon extinguishers.

9.10.1 **Fire Water Mains**

At all fuel terminals where fire water pipelines are installed, the pipelines should extend near as possible to the heads of piers with a number of hydrant points. The hydrant points generally consist of headers with individually valved outlets fitted with a fire hose connection. Fresh water or sea water can be used. If the pier is restricted, the hydrant points shall be spaced not more than two or three standard hose lengths apart.

9.10.2 **Foam Mains**

Special conditions at some fuel terminal piers have warranted the provision of a pipeline for either foam solution or foam compound. These systems should be designed so that they can provide foam as close as possible to the area to be protected. Where such a system is provided, the line should have a number of hydrants. Where a pier is restricted, these hydrant points shall be spaced not more than two or three standard hose lengths apart. The hydrant points consist of a header fitted with two outlets individually valved and fitted with a fire hose connection. A foam solution pipeline of this type may be designed to receive solution from mobile appliances at 1000 gpm or fixed proportionate foam at 8000 gpm.

9.10.3 **Deluge System**

A deluge system dumps copious quantities of water on the fire to cool it. Such a system is not recommended for petroleum fires since it would carry the ignited fuel to unaffected areas. A fire water system must be designed so that the deluge systems or similar fixed cooling arrangements do not materially reduce the volume of water required for firefighting and foam applications.

9.10.4 **Aqueous Film Forming Foam (AFFF)**

AFFF concentrates are synthetic foaming liquids designed for use with fresh, sea, or brackish water. When mixed with water, these

specially formulated concentrates react and produce a foam (or gas-filled air bubbles) that spreads over the fuel, forming vapor sealing water film. Since the foam is lighter than the aqueous concentrate solution and lighter than the flammable or combustible liquid it floats on, it produces an air-excluding, cooling, continuous layer of vapor sealing water bearing material that extinguishes the fire and prevents further combustion (reflash). AFFF can also be used on spilled fuel to prevent ignition of vapors.

Fixed foam-generating equipment systems, such as the sub-surface foam injection system for tank structures, apply AFFF by injecting it below the liquid level of a burning petroleum storage tank. The foam floats to the top and extinguishes the fire. AFFF also can be applied at the top of the tank through foam chambers.

Existing water sprinkler systems can be adapted to discharge an AFFF agent.

9.10.5 Halogenated Extinguisher Agent

Halon 1301 is of chemical composition, that in terms of firefighting, does not "fight" fire physically but rather inhibits the flame and has a smothering action. By physically and chemically inhibiting the combustion reaction, Halon 1301 offers fast extinguishing and safety in the protected area. It is the only gaseous agent approved for use in occupied areas, since it is low in toxicity. However, it does displace oxygen, which requires immediate evaluation of the areas. Its main advantage is that it does not damage property and leaves no mess to clean up. After use in a fire, the area should be well ventilated before personnel are allowed to enter. It is particularly useful for Class "B" and "C" fires.

9.10.6 Alarm System

Some general guidelines for fire alarm systems and fire alarm response are provided below:

- The terminal fire alarm system or a ship's fire alarm, or both, will be operated immediately when a fire is detected.

- The Fire Control Center, normally the fuel terminal fire department, will be contacted as quickly as possible. Verbal communication is preferred and the following vital information should be relayed: nature of fire or emergency, name of tank farm involved (tank numbers, pumps, pipelines, etc.), name of ship and berth number, nature of immediate assistance required and nature of casualties.

- The terminal fire department is the site coordinator who will direct, provide, coordinate, and control all firefighting and associated activities. This coordination

would include movement to or from piers and the action of outside assistance personnel or authorities. It is mandatory, therefore, that adequate communication systems be provided linking forward fire control, land-based fire appliances (other local fire departments), water borne fire appliances (harbor authorities and services), tugs, rescue launches, ships at berth, medical service, police and other necessary authorities.

9.11 FIREFIGHTING PROCEDURES

All fuel terminals must publish terminal emergency procedures instructions that include actions to be taken in the event of fire or other emergency. This instruction must address:

- o Fire prevention procedures;
- o Location of fire alarms and emergency telephones;
- o Fire reporting procedures;
- o Evacuation procedures;
- o Location and use of firefighting equipment;
- o Mutual assistance agreements;
- o Firefighting coordination; and
- o After action report requirements.

This instruction should be incorporated into the fuel department's operations manual. Each major location (e.g., pier, pumphouse, valve pit, hose or pipeline, tank truck loading rack, reclamation plant, on all berths at the pier or tank farm) shall have permanently and conspicuously posted a copy of "INSTRUCTIONS IN CASE OF FIRE." See Exhibit 9-4 for a description of what firefighting techniques can be employed for special hazards.

EXHIBIT 9-4

FIREFIGHTING TECHNIQUES BY HAZARD

The following are some basic actions that can be taken to contain or minimize the risk of a major fire:

- o A minor spill should be attacked using dry chemical, foam extinguishers, or water fog or spray.
- o A large spill from a burst hose or loading arm should be fought with large dry chemical appliances, followed up with foam attack or water fog or spray. Surrounding risks of ignition should be cooled with water spray if foam is not used. If foam is used, no water spray should be used since water will carry away the protection the foam has provided.
- o A spillage of oil on surrounding waters shall be fought by emulsifying the oil with water jets or by applying foam coverage as appropriate.
- o Electrical fires shall be extinguished by switching off the power, and electrically isolating the location and using CO_2 or dry chemical extinguishers.
- o Bedding, clothing, wood, canvas, ropes, grass, or trash can be extinguished with large quantities of water (deluge or water sprinklers) or extinguishing agents containing large proportions of water. Cool surrounding area to prevent re-ignition.
- o Fire in cargo tanks shall be fought with foam or steam smothering. In the case of heavy oils, water fog or spray should be used.
- o Fire at sighting ullage ports shall be extinguished with direct chemical, foam jets or heavy water spray horizontally across the tank opening until it is possible to close the ports.
- o Pumproom or manifold fires shall be fought by shutting the pump power off and stopping ventilation. Use foam and water fog and spray as extinguishing agents.

Chapter Ten:
ENVIRONMENTAL PROTECTION

This Page Left Blank Intentionally.

CHAPTER TEN: ENVIRONMENTAL PROTECTION

10.1 INTRODUCTION

The Navy is committed to actively protecting and enhancing the quality of the environment by adhering to all applicable regulatory requirements and by preventing or controlling pollution caused by Navy facilities. There are also legal requirements to reinforce this commitment. The Navy's environmental protection program, as it applies to petroleum operations, is summarized in this chapter.

10.2 REFERENCES AND DIRECTIVES

Major environmental references on fuel operations are:

OPNAVINST 5090.1	- Environmental and Natural Resource Protection Manual
NAVPETOFFINST 4100.1	- Fuel Reclamation
NAVFAC P-908	- Oil Spill Control for Inland Waters and Harbor
NAVPETOFFINST 4025.2	- Handling, Storing, Recycling and/or Disposing of Contaminated Low Flash Petroleum Products
NAVFAC MO-230	- Maintenance and Operation of Fuel Facilities, Chapter 3, Environmental Protection
NAVFAC MO-911	- Utilization of Navy-Generated Waste Oils as Burner Oil
MIL-HDBK-1005/9	- Industrial and Oily Waste Water Control
API Standard 653	- Tank Inspection, Repair and Alteration
29 CFR 1910.120	- HAZWOPER Training
33 CFR 153-156	- Marine Terminal Regulations
40 CFR 60	- Air Regulations
40 CFR 112	- Oil Pollution Prevention
40 CFR 122	- Waste Water and NPDES Permits
40 CFR 266.4 and 279	- Used Oil
40 CFR 280	- UST Regulations

49 CFR 170-176	- DOT Tank Truck and Rail Car Regulations
49 CFR 194	- DOT Onshore Pipeline Regulations
EO 12088	- Federal Compliance with Pollution Control Standards
DOD Directive 6050.16	- Environmental Standards at Overseas Installations

DOD Overseas Environmental Baseline Guidance Document

DFSC Environmental Guide for Fuel Terminals

Oil Spill Response Technical Manual NEESA Code 112E3

10.3 BACKGROUND

The Navy's environmental protection program is delineated in OPNAVINST 5090.1B. This instruction shall be used as the primary guide in dealing with all environmental matters. Navy Facilities Engineering Command (NAVFAC) Manual MO-230, Maintenance and Operations of Fuel Facilities, Chapter 3 provides additional guidance concerning fuel related environmental matters. The organization assigned to assist Navy shore activities with environmental matters is the Naval Facilities Engineering Command (NAVFACENGCOM). Fuel facilities will usually deal with NAVFACENGCOM Engineering Field Divisions (EFDs) designated as the environmental focal point for site-specific environmental assistance. A map showing geographical areas of responsibility for each EFD, their address, and telephone number is provided in Appendix 17.

10.4 FUEL FACILITY ENVIRONMENTAL PROTECTION

At fuel facilities, the major area of environmental concern centers on the handling and storage of petroleum products. There are several environmental requirements which relate directly to fuel operations and facilities. In addition, personnel shall be familiar with reporting requirements, equipment, and training needs that support environmental programs. These subjects are discussed below.

10.4.1 Storage Tanks

This section provides information and guidance applicable to the regulation of both underground storage tanks (USTs) and aboveground storage tanks (ASTs) containing petroleum products. Additional information concerning this topic may be found in OPNAVINST 5090.1B, Chapter 16 and 40 CFR 280.

ASTs are not currently subject to Federal regulation beyond the petroleum pollution prevention and discharge reporting requirements of 40 CFR 110. Some states have new AST regulations and activities should contact their local EFD for specific information regarding compliance with these AST regulations and any subsequent project development. Although ASTs are not currently covered by Federal regulations, it is expected future legislation will address this issue.

Existing USTs which are governed by Federal, state, or local regulations will be either replaced or upgraded to meet corrosion protection and spill/overfill prevention standards by 22 December 1998. These regulations apply only to regulated USTs. As defined in 40 CFR 280.1, airport hydrant fuel distribution systems and field constructed tanks are excluded from the Federal UST regulations.

For those activities who have both an AST management plan and a UST management plan, the combination of both are referred to as a facility tank management plan. As more states regulate ASTs, fuel facilities will need to develop comprehensive tank management plans to comply.

10.4.2 Oil Management Ashore

EPA regulations control the marketing and burning of hazardous waste fuel and used oil. These regulations, which are extremely complex, essentially prohibit the burning of hazardous waste fuel and off specification used oil for energy recovery in "non-industrial boilers." To burn these fuels requires EPA notification and detailed analysis of the fuel to be burned. Detailed guidance on the handling and burning of used oils is provided in Appendix 18 and OPNAVINST 5090.1B, Chapter 9.

Each fuel facility shall develop a used oil management plan. This plan identifies sources of used oils, primary used oil segregation groups (i.e., on-spec used oil, off-spec used oil), recycling options, and detailed operational requirements. The plan should address any used oil burned for energy recovery (40 CFR 266.4 provides additional guidance on this subject). NAVFAC MO-911, Utilization of Navy-Generated Waste Oils as Burner Oil, provides specific guidance for the use of waste oils as a supplemental fuel in Navy boilers.

Reclaimed fuel is a used oil which has been subject to a process which allows it to be recovered and re-utilized as a usable product. Guidance concerning Navy fuel reclamation processes may be obtained through Navy Petroleum Office (NAVPETOFF) and the cognizant EFD. NAVPETOFF manages and controls a reclaimed petroleum product called Fuel Oil Reclaimed (FOR). NAVPETOFFINST 4100.1 provides additional guidance on this subject.

Guidance concerning the handling, storing, recycling, and/or disposal of contaminated low flash petroleum products can be found in NAVPETOFFINST 4025.2.

10.4.3 Oil and Hazardous Substance Contingency Planning

Chapter 10 of OPNAVINST 5090.1B provides detailed guidance concerning oil and hazardous substances (OHS) contingency planning and The Oil Pollution Act of 1990 (OPA 90). OPA 90 amends the Clean Water Act (CWA) to strengthen the National Response System, clarify Federal response authority, increase penalties for spills, require tank vessel and facility response plans. OPA 90 provides new requirements for spill response planning and training, drills and exercises.

A primary requirement of OPA 90 is to strengthen the National Response System. An outline of the Navy's OHS pollution response organization is provided in Appendix 19. Primary components of this system are Area Coordinators, who are responsible for developing area Contingency Plans (ACP), a Navy On-Scene Commander (NOSCDR) who is normally the Regional Environmental Coordinator, a Shoreside Commander or Facility Incident Commander (FIC), and a Facility On-Scene Coordinator. Note: The FIC replaces the Navy On-Scene Commander (NOSCDR) defined in earlier instructions. The Facility Response Plan (FRP) needs to identify personnel who have been assigned to each of the preceding components. Since these positions periodically change, care must be taken to update the FRP accordingly. The entire response structure is called the Incident Command System (ICS) and is critical to any FRP.

Commanders designated as NOSCs shall have an OHS contingency plan providing geographic coverage for the assigned area. NOSC plans shall conform to the contingency planning instructions issued by area coordinators and shall identify Navy facility assignments and responsibilities within the NOSC region. Facility Incident Commanders and Facility Response Coordinators need to be familiar with NOSC OHS contingency plans and integrate them into the FRP.

FRPs are required to be submitted by a broad range of activities. Four Federal agencies regulate the different categories of facilities required to submit FRPs. The U.S. Coast Guard (USCG) regulates deepwater ports and Marine Transportation-Related (MTR) facilities. These regulations are specified in 33 CFR 150 and 154. EPA regulates non-transportation related onshore facilities and these regulations are found in 40 CFR 112. The Research and Special Programs Administration (RSPA) regulates mobile facilities (tanks trucks, railroad cars, and portable tanks) and these regulations are found in 49 CFR 170-176. RSPA also regulates offshore facilities and pipelines and these regulations are found in 49 CFR 194.

Most Navy facilities fall under either USCG or EPA jurisdiction. Facilities that meet the criteria for more than one type of facility are called "complex facilities." No facility is required to have more than one FRP. However, that FRP must be submitted to every Federal agency that has jurisdiction over that facility. The best approach to complying with this requirement is to develop an FRP that meets the most stringent of the Federal or state requirements and then develop a cross reference sheet for each agency charged with oversight. It should be noted that a Spill Prevention Control and Countermeasures (SPCC) Plan is a separate document (see section 10.4.8), although some states have combined the FRP and SPCC into a separate plan. Assistance in developing site specific instructions can be obtained from the Navy On-Scene Coordinator (NOSC), cognizant EFD, or NAVPETOFF. Naval Facilities Engineering Command, Southern Division (SOUTHDIV) has developed a baseline FRP outline which can be utilized to develop site specific FRPs.

OPA 90 requires quarterly spill notification and emergency response procedures drills and subsequent evaluations of the responsiveness of established plans. OPA 90 also requires annual tabletop and equipment deployment drills and triennial "area exercises" intended to demonstrate and test worst case spill response capabilities. Additionally, OPA 90 provides for unannounced drills which may be conducted as frequently as on an annual basis. Activities need to document training procedures in the FRP and be prepared to conduct unannounced drills. See section 10.4.6 of this chapter for additional details concerning environmental training.

10.4.4 Spill Reporting

All Navy facility oil/hazardous substance discharges, regardless of quantity, that reach, or potentially reach navigable waters shall be reported immediately according to the procedures provided in Chapter 10, section 10-4.2 and 10-4.3 of OPNAVINST 5090.1B. The message format for reporting spills of oil/hazardous substance is provided in Appendix 20. **Note: All Navy shore activities should ensure that Navy Petroleum Office, their major claimant, Defense Fuel Supply Center (DFSC-F), cognizant Defense Fuel Region (DFR), and their environmental regional coordinators are included as info addees.**

10.4.5 Oil Spill Equipment

Materials needed to respond to oil spills can be broken into two categories: consumables and equipment. Consumables are those materials (i.e., sorbents, rags, etc.) which are utilized in bulk amounts to clean up oil spills, and equipment are those specialized long life items (i.e., boats, booms, and trucks) held in reserve to assist with oil spill clean up operations. The quantity and type of oil spill consumable materials are established and controlled by the local activity. The types of

oil spill control equipment and quantities at each facility is set by the activity, validated by the Naval Facilities Engineering Service Center (NFESC) and verified by the NOSC.

Appendix 21 provides some recommended items for stockpile in an oil spill response locker. Where possible, these items have been crossed to a national stock number. It is recommended that activities establish both a central spill locker and site lockers for those areas which would require quick and positive response actions. Note: Activities are responsible for establishment, stocking, and replenishment of these consumable materials.

The Annual Allowance and Requirements Review (AARR) is an inventory, by activity, of NAVFAC procured oil spill clean up equipment and its condition. Verification of the inventory worksheets is required annually. This worksheet is the basis for developing and justifying the budget for funding initial outfitting and equipment replacement. NFESC in Port Hueneme, California, is assigned the responsibility for procurement, inventory management, and reporting of oil spill equipment. Upon request, NFESC Code 422 is also available for design of permanent and non-permanent boom systems. Additional guidance concerning use of oil spill equipment may be found in the Oil Spill Response Technical Manual, prepared for the old NEESA Code 112E3 and available through NFESC Code 422 and NAVFAC Manual P-908, Oil Spill Control for Inland Waters and Harbors.

The oil spill clean up equipment subject to inventory is listed below. See Appendix 22 for a description of each type of equipment:

- o Large Skimmer (DIP 3001)
- o Boom Platform
- o Boom, Class I
- o Boom, Class II
- o Boom, Permanent
- o Boom Mooring Systems
- o Utility Boats (19' & 20')
- o Vacuum Trucks
- o Rapid Response Skimmers (will replace DIP 3001)

10.4.6 Oil Spill Training

Chapter 24 of OPNAVINST 5090.1B provides general guidance for environmental training. Each activity must establish specific training programs to comply with Occupational Safety and Health (OSH), Oil Pollution Act of 1990 (OPA 90), and applicable State regulations.

OSHA Hazardous Communication (HAZCOM) and Hazardous Waste Operations and Emergency Response (HAZWOPER) training requirements can be found in 29 CFR 1910.1200 and 1910.120

respectively. All personnel involved with fuel operations should have annual HAZCOM training. All personnel involved with oil spill clean up should have an initial 40 hours of HAZWOPER training followed by an 8 hour annual refresher.

NFESC in Port Hueneme, California, contracts for and manages annual training for oil spill On Scene Operations Team (OSOT) and Operations and Maintenance (O&M) of the DIP 3001 skimmer. OSOT training is given at various sites throughout the world and the O&M training is given twice annually at Port Hueneme. Interested activities can contact NFESC Code 422 at 805-982-4846 for additional details.

Training programs and required documentation need to be identified in both the Fuel Operations Manual and the OPA 90 Facilities Response Plan (FRP).

Activities should conduct full operational spill drills quarterly or as required by Federal, state, or local regulations.

10.4.7 Marine Fuel Terminal Operations

The Department of Transportation, through the U.S. Coast Guard and applicable Oil Pollution Prevention regulations (33 CFR 154.3), has jurisdiction over marine transportation related facilities, including piers, pipelines on piers and pier issue/ receipt facilities like marine loading arms and hoses. Activities with marine terminals can expect annual inspections by the Coast Guard. For those activities who desire to be thoroughly prepared for this inspection, a copy of the Bulk Facility Inspection Booklet, USCG publication CG-5562A (2-93), is available at NAVPETOFF.

Among other administrative matters, marine terminal inspections will check for written letters of intent, fuel operations manuals, letters of adequacy, designation of person's in charge, loading arm/fuel hose certifications, and declaration of inspections.

A letter of intent to operate the fuel facility should be on file and current. This document should be updated and forwarded to the USCG Captain of the Port (COTP) when the responsible officer changes.

The fuel operations manual should be in the format indicated in 33 CFR 154.3. In order to obtain a letter of adequacy, the fuel operations manual should be submitted to the COTP for review.

A list of person's in charge (PIC) needs to be on file and current. This document should be submitted to the COTP when designated personnel change. Any one individual who is responsible for a particular marine terminal evolution (i.e.,

loading or unloading of fuel) needs to be designated as a PIC. Each PIC must carry written designation with him or her at all times. Note: In order to be designated a PIC, documentation of training and experience is required and could be asked for during a marine terminal inspection.

Certifications of hose pressure tests and maximum burst pressures need to be on file.

10.4.8 Spill Prevention Control and Countermeasures (SPCC) Plan

Requirements for SPCC plans are addressed in 40 CFR 112.1 and 112.7, and OPNAVINST 5090.1B, section 9-4.2. SPCC plans are not required if the facility has an aggregate unburied storage capacity of 1,320 gallons or less of oil, (provided no single container capacity exceeds 660 gallons) and has a total underground storage capacity 42,000 gallons or less, or could not reasonably be expected to discharge oil into or upon the navigable waters of the U.S. At a minimum, this plan must include a description of containment facilities, diversionary piping, warning system and operating procedures. This plan must be reviewed and certified by a professional engineer every three years, or whenever there is a change in facilities or operations. Facilities which have experienced a spill into navigable waters of 1,000 gallons, or two reportable spills into navigable waters in any 12 month period, are required to submit SPCC plans to the EPA Regional Administrator within 60 days following such a spill.

SPCC plans will be maintained at the facility and be available to EPA Regional Administrators or their designated representatives, and state and local agencies for on-site review during normal working hours. A draft outline for developing facility SPCC plans is available from NFESC or NAVPETOFF. Cognizant EFDs should be contacted for further assistance concerning development and updating of SPCC plans.

10.5 OTHER ENVIRONMENTAL CONCERNS

In addition to oil, there are other pollutants that can affect the operations of fuel terminals. Normally, these types of pollutants are site-specific, so assistance in dealing with them should be obtained from the cognizant EFD.

10.5.1 Water

The major areas of environmental concern relating to water are point source discharges (for example, from a sewage treatment plant or an oily waste treatment plant), which require monitoring under provisions of the National Pollutant Discharge Elimination System (NPDES), and programs for dealing with potential ground water contamination. (For more information, see 40 CFR 122.21 and Chapter 7, section 7-3.8 of OPNAVINST 5090.1B.) Specific information about site-specific regulations on discharge

standards and reporting requirements can be obtained from the cognizant EFD.

10.5.2 Air

The Clean Air Act (CAA) establishes national ambient air quality standards (NAAQS). Achieving these standards is the responsibility of the states which must develop state implementation plans (SIPs) that outline to the EPA how each state will achieve and maintain the NAAQS. States may require pollution control measures which are more stringent than those mandated by EPA, but may under no circumstances allow measure which are less stringent.

Title V of the CAA created an operating permit program to be developed and implemented by the states per EPA regulations. The permit program attempts to clarify, in a single document, all the requirements applicable to a source.

In general, air pollution requirements can be classified according to whether the source is stationary or mobile. Stationary sources are further broken down into "major" and "area" categories. Activities should complete an emissions inventory of all stationary sources to determine if they are a major source. For more information, see 40 CFR 60 and Chapter 5 of OPNAVINST 5090.1B. Specific information and assistance about site-specific regulations can be obtained from the cognizant EFD.

10.5.3 Control of Hazardous Materials

OPNAVINST 5090.1B, Chapters 3 and 12 provide extensive guidance in this area. Generating, collecting, storing, and disposing of hazardous waste are extremely sensitive environmental areas. Fuel personnel should become familiar with the terms hazardous material (HM), hazardous substances (HS), and hazardous waste (HW). Specific definitions of these materials may be found in OPNAVINST 5090.1B 3-3.4 through 3-3.6. A very general definition of hazardous waste is any discarded material (liquid, solid or gaseous) that, because of its quantity concentration, physical, chemical or infectious characteristics may, when released or spilled, pose a substantial hazard to human health of the environment. In addition, to this general definition, the Environmental Protection Agency and state regulatory agencies have classified certain substances as hazardous by definition (for example, tetraethyl lead). Potential hazardous wastes of concern to fuel terminal personnel are slop fuels and tank bottom sludges. Due to the complicated nature of hazardous waste, the storage or disposal of these substances, whether on-site or off-site, should be coordinated with the local hazardous waste coordinator and the cognizant EFD. The hazardous waste coordinator should be able to provide information on hazardous waste minimization and compliance with

any local Consolidated Hazardous Material Reutilization and Inventory Management Programs (CHRIMP).

10.5.4 NEPA

The National Environmental Policy Act (NEPA) establishes policy, sets goals, and provides a means for carrying out environmental policy. NEPA mandates that Federal agencies utilize decision making tools to ensure knowledge of environmental impacts and compliance with various regulations. NEPA further requires a detailed statement on the environmental impact of major Federal actions that significantly affect the environment. Procedures must be in place to ensure that environmental information is available to decision makers and citizens before decisions are made and major Federal actions are taken. Additional information on NEPA may be found in OPNAVINST 5090.1B, Chapter 2.

10.5.5 Noise Pollution Ashore

OPNAVINST 5090.1B, Chapter 17 provides additional guidance concerning noise prevention ashore. The noise control act establishes standards to reduce noise emissions. Fuel facilities, especially Naval Air Stations need to be familiar with Air Installations Compatible Use Zones (AICUZ). The AICUZ program is designed to work with local communities to control generated noise. Specific information and assistance about site-specific regulations can be obtained from the cognizant EFD.

10.5.6 Natural Resources Management

There are a multitude of laws which govern the management of natural resources on Navy lands which are covered in OPNAVINST 5090.1B, Chapter 22, section 22-2. Of these regulations, the management of fish and wildlife, forest management, and wetlands management are important to fuel activities. Specific information and assistance about site-specific regulations can be obtained from the cognizant EFD.

10.5.7 Historical & Archeological Resources Protection

Specific guidance for management of historic and archeological resources may be found in OPNAVINST 5090.1B, Chapter 23. Specific information and assistance about site-specific regulations can be obtained from the cognizant EFD.

10.5.8 Overseas Environmental Programs

Environmental guidance for overseas activities may be found in OPNAVINST 5090.1B, Chapter 18. Governing directives include Executive Order (EO) 12088 of 13 October 1978, which requires Federal compliance with pollution control standards, DOD Directive 6050.16, establishment and implementation of environmental standards at overseas installations of

20 September 1991, and the DOD Overseas Environmental Baseline Guidance Document (OEBGD) of October 1992.

Executive Agents (EA) designated by the Secretary of Defense for each overseas area will publish Final Governing Standards (FGS) for their respective areas. FGS are country specific and provide, among other things, for technical limits on discharges and specific management practices with which installations must comply. FGS are the more stringent of host nation or OEBGD standards.

10.6 CORRECTION OF ENVIRONMENTAL DEFICIENCIES

There are two general types of deficiencies that could result in noncompliance with environmental standards. The first is caused by inaccurate or incomplete operation and maintenance procedures or failure of existing facilities and equipment that results in an incident (for example, an oil spill) in violation of existing environmental standards. The second type of violation stems from the imposition of new environmental standards that result in the noncompliance of historically adequate operations and maintenance procedures, equipment and facilities. To ensure that an activity does not violate existing or new environmental standards, continued review of operational and maintenance practices and an evaluation of equipment and facilities are required by facility personnel in conjunction with the local EFD. Additionally, a detailed assessment of the environmental and natural resources programs will be conducted every three years. Guidance concerning environmental compliance evaluations (ECE) may be found in OPNAVINST 5090.1B, Chapter 20.

10.6.1 Identification

The first step in correcting a deficiency is realizing that a problem exists. In some cases, the identification process may be extremely difficult because the individual conducting a review or evaluation is not aware of the standard being violated or the violation may not be readily apparent. For example, there may be concentrations of heavy metals in emissions from a boiler plant that are difficult to recognize. To solve this problem may require the assistance of an organization with in-depth expertise in the environmental area. For this reason, it is recommended that a close working relationship be established with organizations possessing this type of expertise, such as the Environmental Branch of the cognizant EFD and the Navy Petroleum Office. As part of this relationship, the facility will perform an annual self survey to completely review and evaluate operating and maintenance procedures as well as facility and equipment adequacy. Requests for assistance on these surveys should be made through an Engineering Service Request to the EFD or a request for a technical assistance visit by NAVPETOFF. Activities may conduct their own in-house environmental survey by utilizing and ECE checklist developed by SOUTHDIV. Upon request, a copy of this checklist is available from NAVPETOFF.

Once a deficiency has been identified, it is important to quantify the extent of the problem before defining the scope of corrective action. If the problem is related to inadequate or incomplete operation or maintenance procedures, it is recommended that NAVPETOFF be contacted to assist in changing or updating procedures. Problems associated with facility or equipment deficiencies should be evaluated by both NAVPETOFF and EFD personnel. When the extent of a facility or equipment deficiency has been defined, developing the scope of corrective action will normally be the joint responsibility of EFD and the activity staff civil engineer with NAVPETOFF acting as a technical advisor.

10.6.2 Documentation and Reporting

Project documentation development and submittal procedures for environmental projects are divided into two distinct categories: those environmental projects associated with Navy owned fuel, and those environmental projects associated with DLA/DFSC owned fuel.

Navy owned fuel is that fuel which has been purchased by the Navy for end use. Examples of Navy owned fuel are fuel used for heating plants or auxiliary power generation, and any end use fuel in a reclamation process. If an environmental project is associated with a facility or structure which receives, stores, or issues Navy owned fuel, the preparing activity needs to follow guidelines established by their major claimant for submitting such projects. As a preliminary to submitting these projects, activities need to ensure the deficiency is properly documented according to A-106 procedures. Commands may have previously been familiar with Pollution Control Reports (PCRs). With the publication of OPNAVINST 5090.1B, the use of PCRs has been discontinued and A-106 reporting procedures have taken its place. Additional information concerning A-106 reporting requirements may be found in OPNAVINST 5090.1B, Chapter 1, section 1-4.7. Development, submittal, and follow-up of these types of projects should be closely coordinated with NAVPETOFF and the respective major claimant.

If an environmental project is associated with a facility or structure which receives, stores, or issues DLA/DFSC owned fuel, the preparing activity needs to follow guidelines established by DFSC for submitting such projects. DFSC's Environmental Guide for Fuel Terminals, Chapter 7, provides some general guidance on this subject. Additionally, NAVPETOFF is preparing a guide for environmental project documentation which provides a more in-depth approach to environmental project documentation.

10.6.3 Funding

Funding for environmental projects is again broken down into two categories: those environmental projects associated with Navy owned fuel, and those environmental projects associated with DLA/DFSC owned fuel.

Funding for Navy owned projects should be sought through the activities major claimant and must be documented through the A-106 reporting program. Activities may also seek Defense Environmental Restoration Account (DERA) funds for environmental work associated directly with installation restoration (IR) projects. These funds are managed by Commander, Naval Facilities Engineering Command (COMNAVFACENGCOM). Specific information and assistance concerning DERA funding can be obtained from the cognizant EFD.

Funding for DLA/DFSC sponsored projects are documented and submitted annually under the Maintenance Repair and Environmental (MRE) program (see Chapter 6 for additional information concerning this program) and broken into two areas: specific environmental projects and recurring environmental costs projects. Specific environmental projects are documented and submitted on DD Form 1391 and must be forwarded to DFSC-FQ via major claimant and NAVPETOFF. Documentation in support of a request for funds for recurring environmental costs projects are submitted in accordance with guidance provided in Appendix L of the DFSC Environmental Guide for Fuel Terminals and also forwarded to DFSC-FQ via major claimant and NAVPETOFF. Contact NAVPETOFF Code 30 for additional information or assistance in preparing documentation in support of a DLA/DFSC sponsored environmental project or recurring environmental costs project.

The Navy's environmental protection program is delineated in OPNAVINST 5090.1. This instruction shall be used as the primary guide in dealing with all environmental matters. The organization assigned to assist Navy environmental shore activities is the Naval Facilities Engineering Command (NAVFACENGCOM). Fuel facilities will usually deal with NAVFACENGCOM Engineering Field Divisions (EFDs) designated as the environmental focal point for site-specific environmental assistance. A map showing geographical areas of responsibility for each EFD and the EFD environmental coordinator, addresses and telephone numbers is provided in Appendix 17.

General environmental matters, such as procedures to submit pollution abatement projects, can be handled by referring to guidance found in OPNAVINST 5090.1. If the guidance does not provide the details required, the cognizant EFD should be requested to provide the necessary assistance (for example, development of environmental projects).

This Page Left Blank Intentionally.